UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF TEXAS
HOUSTON DIVISION

COREY PRANTIL, *et al.*,	§	
	§	
Plaintiffs,	§	
	§	
VS.	§	CIVIL ACTION NO. 4:17-CV-02960
	§	
ARKEMA FRANCE S.A., *et al.*,	§	
	§	
Defendants.	§	

MEMORANDUM & ORDER

Pending before the Court are seven motions: (1) Plaintiffs' Motion to Exclude the Opinions of Mr. Gary Papke and Dr. Thomas Hamilton (ECF No. 261); (2) Plaintiffs' Motion to Exclude the Opinions of Dr. Sheng Li (ECF No. 262); (3) Defendant's Motion to Exclude the Opinions of Dr. John Kilpatrick (ECF No. 268); (4) Defendant's Motion to Exclude the Opinions of Mr. Marc Glass (ECF No. 265); (5) Defendant's Motion to Exclude the Opinions of Dr. Marco Kaltofen (ECF No. 266); (6) Defendant's Motion to Exclude the Opinions of Drs. Richard Troast and Charles Werntz (ECF No. 267); and (7) Plaintiffs' Renewed Motion for Class Certification after Remand (ECF No. 264).

The Court held five days of hearings on these motions, running from March 28 to April 1, 2022. Now, for the reasons set forth below, the Court **GRANTS IN PART** and **DENIES IN PART** the parties' Motions to Exclude, and **GRANTS IN PART** and **DENIES IN PART** Plaintiffs' Renewed Motion for Class Certification.[1]

[1] The parties have stipulated that this Memorandum and Order need not be filed under seal. ECF No. 315 at 1.

I. FACTUAL BACKGROUND

The Court described the relevant factual allegations in a prior order, so it will not belabor the point here. ECF No. 169. Still, a high-level summary is as follows. Defendants (collectively referred to as "Arkema") produced a liquid organic peroxide called Luperox in a facility in Crosby, Texas. *Prantil v. Arkema Inc.*, 986 F.3d 570, 573 (5th Cir. 2021). The facility was built in a flood plain near the Gulf Coast. *Id.* In the days leading up to August 24, 2017, it became clear that Hurricane Harvey would make landfall nearby. *Id.* Arkema waited to implement its hurricane preparedness plan until August 25, 2017. *Id.* Apparently, the plan did not meet the moment. Harvey stalled over Texas, leading to several days of heavy rain and flooding. *Id.* Arkema's "ride-out" team moved almost 350,000 pounds of combustible materials to elevated refrigerated trailers. *Id.* The floodwaters continued to rise, however, threatening the trailers' cooling systems. *Id.* The cooling systems eventually succumbed. *Id.* Nine trailers burned between August 31 and September 4, ejecting clouds of smoke and ash into the sky. *Id.* Two of the facility's wastewater tanks overflowed. *Id.* Before long, people near the facility began to report rashes, headaches, eye irritation, blisters, and respiratory issues. *Id.*

Plaintiffs seek to represent a class of all residents and real property owners within a seven-mile radius of the Crosby facility. Plaintiffs ask the Court to certify a damages class under Rule 23(b)(3) for their common-law claims of negligence, trespass, and public nuisance. Plaintiffs also ask the Court to certify an injunctive-relief class under Rule 23(b)(2) for their claims under the Resource Conservation and Recovery Act ("RCRA") and the Comprehensive Environmental Response, Compensation, and Liability Act ("CERCLA").

II. PROCEDURAL HISTORY

This is the second iteration of motions to exclude and motions for certification in this case. Previously, the Court granted Arkema's Motion to Exclude Dr. Bell; denied as moot Arkema's Motion to Exclude Dr. Rogers; denied Arkema's Motions to Exclude Mr. Glass, Dr. Kaltofen, and Dr. Troast; and granted Plaintiffs' Motion for Class Certification. ECF No. 169. Arkema appealed.

In *Prantil v. Arkema Inc.*, the Fifth Circuit held that *Daubert* applies in full force at the class certification stage. 986 F.3d 570, 575–76 (5th Cir. 2021). The Fifth Circuit determined that the Court's previous *Daubert* analysis "was not as searching in its assessment of the expert reports' reliability as it would have been outside the certification setting." *Id.* at 576. The Court of Appeals recognized that "some of Arkema's objections may only affect the weight of the reports without undermining their fundamental reliability," but still made clear that a comprehensive assessment of the reliability of those opinions could not "be deferred." *Id.* The Fifth Circuit therefore vacated the Court's rulings on the parties' Motions to Exclude. *Id.*

On Plaintiffs' damages class, the Fifth Circuit held that the Court's order did not adequately address the predominance prong of Rule 23(b)(3). *Id.* at 580. The Fifth Circuit determined that the order contained insufficient details as to how the Court would conduct trial, and that the order was "wanting in its answer to Arkema's arguments that a trial of class claims would devolve into individualized inquiries on causation, injury, and damages." *Id.* at 578–79. As a result, the Fifth Circuit instructed the Court to engage in more "discussion of how proof of Arkema's conduct will affect trial," and noted that "[f]uture certification proceedings would here benefit from detailing the evidence the parties may use to prove or defend against liability and its commonality to all class members." *Id.* at 580. The Court of Appeals did not hold that certification was necessarily improper, "only that the relative balance of concededly common claim elements to contested

elements of causation and injury warrants closer attention" on predominance. *Id.* The Fifth Circuit therefore vacated the Court's certification of Plaintiffs' damages class. *Id.*

On Plaintiffs' injunctive-relief class, the Fifth Circuit held that the Court's order did not "satisfy the requirement that injunctive relief be reasonably specific," because it was unclear "how the extent of the necessary property remediation can be determined, and whether a responsive injunction can be fashioned to account for Arkema's past remediation efforts." *Id.* at 581–82. The Fifth Circuit therefore vacated the Court's certification of Plaintiffs' Rule 23(b)(2) injunctive-relief class. *Id.*

III. THE PARTIES' MOTIONS TO EXCLUDE

Post-*Prantil*, "the *Daubert* hurdle must be cleared when scientific evidence is relevant to the decision to certify." *Id.* at 575. As a result, the Court must analyze the parties' *Daubert* motions before reaching Plaintiffs' Renewed Motion for Class Certification.

A. Legal Standard

Federal Rule of Evidence 702 provides:

> A witness who is qualified as an expert by knowledge, skill, experience, training, or education may testify in the form of an opinion or otherwise if: (a) the expert's scientific, technical, or other specialized knowledge will help the trier of fact to understand the evidence or to determine a fact in issue; (b) the testimony is based on sufficient facts or data; (c) the testimony is the product of reliable principles and methods; and (d) the expert has reliably applied the principles and methods to the facts of the case.

FED. R. EVID. 702. Under Rule 702, the Court must act as a gatekeeper, "ensur[ing] that proffered expert testimony is 'not only relevant, but reliable.' " *Brown v. Illinois Cent. R. Co.*, 705 F.3d 531, 535 (5th Cir. 2013) (quoting *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579, 589 (1993)). To discharge this gatekeeping function, the Court "must make 'a preliminary assessment

of whether the reasoning or methodology underlying the testimony is . . . valid and of whether that reasoning or methodology properly can be applied to the facts in issue.' " *Id.* (quoting *Daubert*, 509 U.S. at 592–93). "In assessing the 'reliability' of an expert's opinion, the trial court may consider a list of factors including: 'whether a theory or technique . . . can be (and has been) tested,' 'whether the theory or technique has been subjected to peer review and publication,' 'the known or potential rate of error,' 'the existence and maintenance of standards,' and 'general acceptance' of a theory in the 'relevant scientific community.' " *Hinson v. Dorel Juvenile Group, Inc.*, 2016 WL 3199353, at *1 (E.D. Tex. June 9, 2016) (quoting *Daubert*, 509 U.S. at 593–94). Other relevant factors include whether the expert's theory came from litigation or independent research, whether there is a large analytical gap between the data and opinion such that the theory does not "fit" the case, and whether the expert considered alternative explanations. *Advisory Committee Notes to 2000 Amendment* of FED. R. EVID. 702.

District courts need not " 'admit opinion evidence that is connected to existing data only by the *ipse dixit* of the expert.' " *Kumho Tire Co. v. Carmichael*, 526 U.S. 137, 157 (1999) (quoting *Gen. Elec. Co. v. Joiner*, 522 U.S. 136, 146 (1997)). Still, *Daubert* "does not conscript judges into service as the adversary system." *Earl v. Boeing Co.*, 2021 WL 3140545, at *2 (E.D. Tex. July 26, 2021) (citing *United States v. 14.38 Acres of Land*, 80 F.3d 1074, 1078 (5th Cir. 1996)). The party offering the expert must prove " 'by a preponderance of the evidence that the testimony is reliable,' not that it is correct." *Swanston v. City of Plano, Tex.*, 2021 WL 327588, at *2 (E.D. Tex. Feb. 1, 2021) (quoting *Moore v. Ashland Chem. Inc.*, 151 F.3d 269, 276 (5th Cir. 1998)). The trial judge's discretion "will not be disturbed on appeal unless manifestly erroneous." *Watkins v. Telsmith, Inc.*, 121 F.3d 984, 988 (5th Cir. 1997) (cleaned up).

Because the *Prantil* decision is so new, the Court takes this opportunity to clarify how *Daubert* interacts with Rule 23. *Prantil* requires that district courts apply a full-bore *Daubert* analysis at the certification stage. But *Prantil* does not alter the fundamental nature of the *Daubert* inquiry. "*Daubert* 'focuses on principles and methodology, not on the conclusions generated by principles and methodology.' " *In re Processed Egg Prod. Antitrust Litig.*, 81 F. Supp. 3d 412, 417 (E.D. Pa. 2015) (quoting *In re TMI Litig.*, 193 F.3d 613, 670 (3d Cir. 1999)). At class certification, meanwhile, the Court must " 'rule upon the conclusions generated by the principles and methodology,' to the extent that they are relevant to determining whether plaintiffs have satisfied Rule 23(b)." *In re Rail Freight Fuel Surcharge Antitrust Litig.*, 292 F. Supp. 3d 14, 43 (D.D.C. 2017) (cleaned up). An expert opinion may therefore pass muster under *Daubert* without sufficing for certification. In addition, the Court is mindful of *Prantil*'s command that "the *Daubert* hurdle must be cleared *when scientific evidence is relevant to the decision to certify*." *Prantil*, 986 F.3d at 575 (emphasis added). For expert evidence that is not relevant to the decision to certify, then, the Court need not evaluate reliability prior to certification.

B. Plaintiffs' Motion to Exclude Mr. Gary Papke and Dr. Thomas Hamilton

Plaintiffs originally moved to exclude portions of a joint report offered by Mr. Papke and Dr. Hamilton because of confusion concerning primary authorship. ECF No. 261-1 at 1. Plaintiffs also submitted that Mr. Papke could not testify to certain opinions because he was unqualified to do so. ECF No. 295 at 2. However, Arkema subsequently stipulated that it would not offer Mr. Papke "to opine on or testify about the statistical analyses that are presented in Section 2.8 (pages 30–35), Section 2.9 (pages 44–48), or Section 2.10 (pages 48–54) of his September 17, 2021, report." ECF No. 306 at ¶ 1. Arkema also stipulated that it would "offer Dr. Hamilton to opine on

and testify about the statistical analyses that are presented in Section 2.8 (pages 30–35), Section 2.9 (pages 44–48), and Section 2.10 (pages 48–54) of his September 17, 2021, report." *Id.* at ¶ 2. In light of these stipulations, as well as the deposition of Mr. Papke that Plaintiffs took on March 28, 2022, Plaintiffs have "voluntarily withdraw[n] and forego[ne] their Motion to Exclude Opinions Contained in the Expert Report of Gary Papke and Thomas Hamilton." *Id.* at ¶ 3. The Court therefore **DENIES** Plaintiffs' Motion to Exclude Mr. Papke and Dr. Hamilton **AS MOOT**.[2]

C. Plaintiffs' Motion to Exclude Dr. Sheng Li

Arkema offers opinions from Dr. Li to attack Dr. Kilpatrick's take on diminution damages. Plaintiffs, in turn, contend that Dr. Li's opinions should be excluded because he lacks the requisite qualifications, uses an unreliable methodology, offers improper legal opinions, and presents irrelevant conclusions on R-squared values. Some of these contentions do not require the Court's attention at this moment. For example, the Court does not rely on any of the purported legal opinions in Section III of Dr. Li's report for certification. As a result, it need not address the admissibility of those opinions in this order. *See Prantil*, 986 F.3d at 575 ("[T]he *Daubert* hurdle must be cleared when scientific evidence is relevant to the decision to certify."). Still, because some of Dr. Li's opinions prove helpful in the Court's analysis of Dr. Kilpatrick, the Court will address Plaintiffs' relevant critiques below.

[2] Even though Plaintiffs have withdrawn their motion, the Court notes that Arkema's failure to delineate expert responsibility in the joint report injected unnecessary uncertainty into these proceedings. Joint reports can pose a problem if "it isn't clear whether both experts adhere to all of the opinions in the report and they do not delineate which opinions belong to which expert[.]" *K. Barker Co., P.C. v. Valley Plaza*, 541 F. App'x 810, 815–16 (10th Cir. 2013). Going forward, the Court cautions parties that joint reports "should make clear what testimony each individual witness will express, along with the basis and reasons for that testimony." *Merrill Lynch, Pierce, Fenner & Smith, P.C. v. Greystone Servicing Corp., Inc.*, 2010 WL 11530924, at *4 (N.D. Tex. Jan. 5, 2010).

1. Dr. Li's Qualifications

The central question presented by Plaintiffs' Motion is whether Dr. Li's opinions require expertise in real estate appraisal or in statistics. *See* FED. R. EVID. 702 (requiring that the proffered expert has sufficient "knowledge, skill, experience, training, or education" such that his opinion will aid the trier of fact in understanding the evidence or resolving a factual issue). Dr. Li is not qualified to serve as an expert on real estate appraisal. He has no training in the field, has taken no relevant coursework, has obtained no relevant certifications or licenses, and has never worked in the profession. ECF No. 262-3 at 23:6–27:17. Furthermore, Dr. Li did not rely on the Uniform Standards of Professional Appraisal Practice ("USPAP") in forming his opinions and has never read any of the USPAP advisory opinions devoted to mass appraisal and regression.[3] *Id.* at 36:21-23, 118:1-8. Consequently, Dr. Li is unqualified to offer opinions that require expertise in real estate appraisal. Nevertheless, Arkema submits that Dr. Li's opinions rest solely on his expertise in economics and statistics. Dr. Li has a Ph.D. in economics, serves as the Associate Director for NERA Economic Counseling, and has written select articles on economics and statistics. ECF No. 253-3 at 18–21.[4] Thus, to the degree that Dr. Li's opinions grow out of his expertise in economics and statistics, Plaintiffs' challenge to his qualifications must fail.

[3] "The USPAP represents the generally recognized ethical and performance standards for the appraisal profession." *Fuentes v. Texas Appraiser Licensing & Certification Bd.*, 2020 WL 1313734, at *1 (Tex. App. Mar. 20, 2020) (citing Preamble, *Uniform Standards of Professional Appraisal* (2014–15)). It "specifies how appraisers conduct appraisals, the contents of appraisals, how appraisers maintain their records, and how appraisers must conduct reviews of other appraisers' work." *Id.* (internal citations omitted).

[4] Plaintiffs do not dispute Dr. Li's qualifications in the fields of economics and statistics. *See* ECF No. 262-1 (describing Dr. Li as "an economist who provides opinions primarily on antitrust matters with no experience, training, or education in real estate appraisal").

Cotromano v. United Technologies Corp. provides helpful framing for this issue. 2018 WL 2047468 (S.D. Fla. May 2, 2018). In that case, a putative class of plaintiffs alleged that Pratt & Whitney had released toxic contaminants and diminished their property values. *Id.* at *1. The plaintiffs hired Dr. Kilpatrick to conduct a mass appraisal and quantify the effect of environmental stigma on property values. *Id.* at *14. In Dr. Kilpatrick's analysis, he relied in part on a contingent valuation survey that asked for people's willingness to pay for a house in a "cancer cluster." *Id.* at *15. The defendant hired Professor John Hauser to rebut Dr. Kilpatrick's approach. *Id.* at *16. Professor Hauser taught marketing at the Massachusetts Institute of Technology. *Id.* He opined that Dr. Kilpatrick's contingent valuation survey was unreliable. *Id.* The plaintiffs challenged Professor Hauser under *Daubert* for his lack of expertise in real estate appraisal. *Id.* The district court, however, permitted Professor Hauser's opinions because his "lack of background in appraisal activity [did] not necessarily defeat his qualifications to comment on the validity of Dr. Kilpatrick's survey methodology." *Id.* at *17. Professor Hauser's "expertise and extensive experience in consumer decision-making and opinion research . . . [made him] well-qualified to testify as an expert regarding the validity of the contingent valuation survey that is the lynchpin of Dr. Kilpatrick's diminution opinion." *Id.* Professor Hauser's "lack of real estate appraisal credentials . . . [went] to the weight, not to the admissibility of his testimony[.]" *Id.*

Here, Dr. Li's position recalls that of Professor Hauser in *Cotromano*. All of the opinions offered by Dr. Li that are relevant to certification (or to the analysis of Dr. Kilpatrick's report) rest on Dr. Li's expertise in economic and statistical analysis.[5] Still, the Court proceeds section-by-section for completeness.

[5] The Court does not analyze Sections IV-B and IV-D of Dr. Li's report because the opinions offered therein are irrelevant to the Court's decision on certification. *See Prantil*, 986 F.3d at 575

i. Section IV-A

The first major substantive section in Dr. Li's September 2021 report is titled: "Dr. Kilpatrick's Erroneous Trendline Analysis Obscures and Misrepresents Actual Trends in the Data." ECF No. 253-3 at 6. Here, Dr. Li attacks Dr. Kilpatrick's trendlines because he believes that they do not fit the underlying data. *Id.* This opinion has nothing to do with real estate appraisal; Dr. Li simply takes Dr. Kilpatrick's trendline analysis as he finds it. Dr. Li does not have to be schooled in USPAP or real estate appraisal to evaluate the fit between a trendline and the underlying data. That is a question of econometrics and statistics. And to the degree that Dr. Li ignores subtleties that are necessary for appraising real estate, those failures go more to the weight that his testimony must be afforded than to its admissibility. The Court therefore finds that Dr. Li is qualified to offer the opinions in this section.

ii. Section IV-C

Dr. Li offers two opinions in Section IV-C: (1) Dr. Kilpatrick fails to explain why he stopped analyzing transactions after August 2018 when he had access to data through 2021 (¶ 21); and (2) had Dr. Kilpatrick properly incorporated subsequent sales data, he would have realized that class members suffered no property value diminution (¶ 22). ECF No. 253-3 at 11–12.

Dr. Li's first opinion rests solely on his background in economics and statistics. Dr. Li does not need expertise in real estate to question Dr. Kilpatrick's decision to limit his dataset; Dr. Li's expertise supports his opinion that robust statistical analysis uses as much recent data as possible. Dr. Li is therefore qualified to offer this opinion. What's more, the applicability of Dr. Li's opinion

("[T]he *Daubert* hurdle must be cleared when scientific evidence is relevant to the decision to certify.").

to the real estate context is confirmed by the joint report from Mr. Papke and Dr. Hamilton. That report states: "it is a serious flaw for Dr. Kilpatrick to have limited his analysis in this way," and opines that "ignoring the readily available market data . . . is a violation of USPAP Standards[.]" ECF No. 253-6 at 18. Dr. Li is also qualified to offer the graph—Figure 2.B—that immediately follows his opinion in this section. All that Dr. Li does in Figure 2.B is extend Dr. Kilpatrick's dataset through 2021 and calculate the compound annual growth rate ("CAGR"). Again, this reflects a statistician's view on an appraiser's work. As a result, the Court finds that Dr. Li is qualified to offer this analysis.

However, the Court must exclude Dr. Li's second opinion that the data "shows no indication that purported class members suffered any property value diminution." ECF No. 253-3 at 12. Here, Dr. Li relies on price data from before Hurricane Harvey to disprove a causal link between the Arkema Incident and subsequent diminution in property values. But the simple fact that home prices inside the putative class area ("Inside" prices) grew more than prices outside the area ("Outside" prices) for a four-year period around the Arkema Incident does not permit Dr. Li reliably to conclude that class members suffered no diminution in value. Because Dr. Li incorporates pre-Incident data into his CAGR calculation, the difference in price growth could be traceable to pre-Incident trends. Thus, the divergence in CAGR does not actually undermine Plaintiffs' diminution-in-value claim. As a result, while the Court finds that Dr. Li is qualified to offer his opinion that Dr. Kilpatrick's dataset is unnecessarily limited (¶ 21), it excludes Dr. Li's opinion that expanding the dataset shows no diminution in property valuations (¶ 22).

iii. Section V-A

Dr. Li offers two main opinions in Section V-A. First, Dr. Li opines that Dr. Kilpatrick's calculations of "Unimpaired" property values are improperly based on transactions in the class area that occurred before Hurricane Harvey. ECF No. 253-3 at 14. And second, Dr. Li opines that Dr. Kilpatrick's efforts to calibrate his "Unimpaired" model are unreliable because "[i]f a regression model is calibrated using allegedly impaired transactions, then any differences between the predictions of that regression model and the actual values of class members' properties would correspond to prediction errors from the regression model and statistical noise, rather than actual impairment." *Id.*

Dr. Li's opinion that Dr. Kilpatrick should not have relied on pre-Harvey property values to determine "Unimpaired" values rests on an assumption about how Hurricane Harvey affected prices. In offering this opinion, Dr. Li does not simply draw on his statistical expertise. Nevertheless, it does not take a real estate expert to understand that Hurricane Harvey could have damaged homes. And the fundamental import of this opinion is not that Hurricane Harvey affected property values in a specific way, but that Dr. Kilpatrick's model fails to address an important exogenous variable. That is a concept rooted in statistical methods and analysis. What's more, to the degree that Dr. Li needs a real estate predicate for this opinion, that predicate appears in the joint report from Mr. Papke and Dr. Hamilton. *See* ECF No 253-6 at 19 (noting that Hurricane Harvey affected home prices and values in different ways depending on land use, neighborhood characteristics, and other idiosyncratic factors). Consequently, the Court finds this opinion to be rooted in Dr. Li's statistical expertise.

Dr. Li's second opinion also is not based on any expertise in real estate appraisal. Dr. Li simply states that in statistics, unimpaired regressions should be calibrated without using the

impaired transactions. This opinion has nothing to do with real estate and everything to do with statistics. The Court therefore finds that Dr. Li is qualified to offer the opinions in Section V-A.

iv. Section V-B

Next, Dr. Li opines that Dr. Kilpatrick's regression model is flawed because "it does not take into account any variables that measure the effect of Hurricane Harvey or factors that, as I understand, significantly affect property pricing." *Id.* at 14. This opinion is a more detailed version of Dr. Li's first opinion from Section V-A. Specifically, Dr. Li opines that "Dr. Kilpatrick's regression does not account for property-specific factors such as each property's proximity to sources of chemical emissions that are unrelated to the 2017 Crosby Incident, location and topography, construction characteristics, locations of water breach, and preventative measures taken by owners." *Id.* at 15. Dr. Li therefore concludes that Dr. Kilpatrick's model is "fundamentally unsuited for calculating class-wide economic damages in this case." *Id.*

As with Dr. Li's first opinion from Section V-A, this opinion mixes concepts from real estate appraisal and statistics. Dr. Li has no relevant experience that permits him reliably to conclude that property values turn on factors such as proximity to sources of chemical emissions, location, topography, construction characteristics, and preventative measures taken by owners. But Dr. Li does not draw those conclusions himself. Instead, Dr. Li relies on real estate appraisal experts (such as Mr. Papke and Dr. Hamilton) who suggest that these factors can affect property values. *See e.g.*, ECF No. 253-6 at 71–75. The value-add from Dr. Li's testimony, then, is his opinion that failing to control for exogenous variables confounds Dr. Kilpatrick's effort to link changes in property values to the Arkema Incident. At its core, this is a statistical opinion. And to the degree that Plaintiffs contend that the variables mentioned by Dr. Li are not important, that

position goes more to the weight of Dr. Li's opinion than to its admissibility. The Court therefore finds that Dr. Li is qualified to offer the opinion in Section V-B.

v. Section V-C

Finally, Dr. Li opines that Dr. Kilpatrick's "unimpaired" value estimates "suffer from poor statistical precision," making them "inappropriate benchmarks for assessing property value diminution in this case." ECF No. 253-3 at 15. This opinion is unrelated to idiosyncratic issues in the field of real estate appraisal. Instead, this subsection focuses solely on demonstrating the prediction errors in Dr. Kilpatrick's regression model and explaining why these errors indicate that his approach is unreliable. Here, Dr. Li simply uses his expertise to engage with the statistical analysis at the core of Dr. Kilpatrick's work. As a result, the Court finds that Dr. Li is qualified to offer the opinions in Section V-C.

2. Dr. Li's Methodology

Plaintiffs also move to exclude Dr. Li's opinions because he "disclaims any use of real estate appraisal methodology when analyzing Dr. Kilpatrick's real estate appraisal report." ECF No. 261-1 at 10. Specifically, Plaintiffs argue that Dr. Li's failure to comply with USPAP or other professional appraisal standards renders his opinions unreliable. *Id.* at 11–12. Plaintiffs further note that Dr. Li did not even review any real estate appraisal "standards, literature, or methodologies." *Id.* In large part, however, this methodological argument collapses into Plaintiffs' position on Dr. Li's qualifications. Plaintiffs' central point here is that Dr. Li does not understand real estate appraisal, so his critiques of Dr. Kilpatrick's approach must be unsound. Again, however, most of Dr. Li's report simply criticizes Dr. Kilpatrick's statistical approach and interpretations. Dr. Li does not need to be an expert in real estate appraisal to offer those criticisms.

Take, for example, Dr. Li's critique of Dr. Kilpatrick's trendlines from Section IV-A. Dr. Li writes: "the fit of Dr. Kilpatrick's purported trendline to the underlying data is so poor that the direction of the trendline's predictions is opposite to the direction of the underlying data[.]" ECF No. 253-3 at 7. The degree of fit between a trendline and the underlying data is rooted in statistics and econometrics, not real estate appraisal. Dr. Li testified that he has "expertise in whether [Dr. Kilpatrick is] actually using the econometrics methods properly. . . . And for some things in statistics and econometrics, there's objective definitions for the concepts he's talking about. . . . An average is an average, whether you're using it for a real estate application or whether you're using it for wages." ECF No. 286-1 (Exhibit 2) at 29:9-19. To the extent that the real estate industry and USPAP establish different standards for measures of goodness-of-fit, that goes to weight rather than admissibility. Consequently, Dr. Li's failure to deploy USPAP standards or methodologies does not render his approach unreliable.

3. Dr. Li's Opinion on R-Squared

The parties have also engaged in a drawn-out dispute over Dr. Li's discussion of R-squared values. The R-squared values in this case are irrelevant to the Court's decision on certification. Nevertheless, the Court addresses the parties' arguments here to forestall additional confusion post-certification.

The original sin that sparked this dispute was Dr. Kilpatrick's decision to display a graph for his Inside/After trendline that included an R-squared value of 0.3515.[6] ECF No. 231-4 at 37. When Dr. Li reviewed Dr. Kilpatrick's report, he determined that the R-squared for this trendline

[6] As the Court describes in more detail in the section devoted to Dr. Kilpatrick, this trendline is designed to demonstrate the post-Incident trend in prices inside the class area.

was actually -0.369. ECF No. 253-3 at 8. Plaintiffs contend that Dr. Li's opinion on the "true" R-squared value should be excluded because it is not relevant. Plaintiffs note that none of the foundational materials on mass appraisal mentions R-squared. ECF No. 278 at 9–10. Plaintiffs therefore submit that only the Coefficient of Dispersion standards, which Dr. Kilpatrick uses to assess his regression model, are relevant when evaluating a mass appraisal approach. *Id.* at 10.

Generally, R-squared "is a measure of the proportion of variation in data which is explained by the regressor variable." *Chemical Manufacturers Association v. U.S. E.P.A.*, 870 F.2d 177, 215 n.139 (5th Cir. 1989), *decision clarified on reh'g*, 885 F.2d 253 (5th Cir. 1989). Typically, a negative R-squared suggests that a trendline diverges substantially from the underlying data. After reviewing the reports and statistical literature in this case, the Court concludes that Dr. Li's negative R-squared for Figure 6 can be traced back to Dr. Kilpatrick's decision to manually anchor his Inside/After trendline where his Inside/Before trendline left off. By manually selecting that anchor, Dr. Kilpatrick forced a higher intercept on the Inside/After trendline than would otherwise follow from the underlying data. That higher intercept, in turn, caused the Inside/After trendline to diverge from the data and produced a negative R-squared. Importantly, however, Dr. Kilpatrick had a reason for manually anchoring his Inside/After trendline. If he did do so, the trendline would not incorporate the drop in property prices that occurred immediately following the Arkema Incident. Contrary to Arkema's protestations, then, the negative R-squared does not "reveal" the Inside/After trendline to be a "false" trendline that "does not match the underlying data." ECF No. 286 at 11.

Still, Plaintiffs also overstate their position on R-squared. As the Court explains in its evaluation of Dr. Kilpatrick, his approach contains two distinct subparts: regression analysis and trendline analysis. Dr. Kilpatrick validates his regression analysis with various statistical

methodologies. But he provides no statistical information regarding goodness-of-fit for his trendlines. The R-squared value, then, is the only mathematical measure that relates to Dr. Kilpatrick's trendline analysis. And at the very least, Arkema is correct that a negative R-squared value suggests that the trendline diverges from the underlying datapoints. Consequently, while the Court does not rely on R-squared for certification (or for the Motion to Exclude Dr. Kilpatrick), it notes that Dr. Li's opinion on negative R-squared appears sufficiently relevant to clear the *Daubert* hurdle.[7] *See Chemical Manufacturers Association*, 870 F.2d at 216 (describing R-squared as "informative," even if "it cannot of itself conclusively prove or disprove the adequacy of a particular categorization scheme").[8]

4. Summary

Writ large, the Court rejects the lion's share of Plaintiffs' arguments against Dr. Li. Dr. Li's opinions rest on his expertise in economics and statistics, not real estate appraisal. And with one exception—Dr. Li's second opinion in Section IV-B—his methodologies are reliable and

[7] Plaintiffs further contend that Dr. Li's opinion on R-squared should be excluded because it is not reliable. First, Plaintiffs argue that it is not supported by proper calculations. The Court solved this problem by permitting Dr. Li to supplement his report with manual calculations. ECF No. 274 at 1–5. Second, Plaintiffs argue that R-squared cannot be negative. When the Fifth Circuit addressed R-squared in *Chemical Manufacturers Association*, it said that "[t]he range of values for [R-squared] always falls between 0 and 1[.]" 870 F.2d at 215 n.139. Plaintiffs further note that Dr. Kilpatrick testified that "negative coefficients of determinant [(R-squared)] are erroneous," ECF No. 218-1 at 168:22-24, and that Dr. Hamilton testified that it is impossible to get a negative R-squared without using imaginary numbers, ECF No. 281-3 at 87:11-13, 88:3-5. But R-squared can be negative in certain circumstances, including when the regression line provides "a worse fit than the average line." Davide Chicco, Matthijs J. Warrens, & Giuseppe Jurman, *The coefficient of determination R-squared is more informative than SMAPE, MAE, MAPE, MSE and RMSE in regression analysis evaluation*, 7 PeerJ Comput. Sci. e623, 3 (2021). Thus, the Court does not agree with Plaintiffs that Dr. Li's opinion is inherently unreliable.

[8] The Court will not address Dr. Li's opinions on the Microsoft Excel bug; Arkema represented at the hearing that those opinions are unnecessary, and the Court has independently determined that they are irrelevant. ECF No. 307 at 22:8–25.

rooted in his expertise. The Court therefore **DENIES** Arkema's Motion to Exclude Dr. Li **IN PART** and **GRANTS** it **IN PART**. Absent the one opinion identified from Section IV-B, the Court finds that Dr. Li's opinions that prove relevant to certification are reliable.

D. Arkema's Motion to Exclude Dr. John Kilpatrick

Dr. Kilpatrick's expert report is the lynchpin of Plaintiffs' damages class. Unfortunately for Plaintiffs, however, the Court finds that Dr. Kilpatrick's opinions are unreliable and must be excluded.

1. Summarizing Dr. Kilpatrick's Opinions

Before jumping into the *Daubert* particulars, the Court must outline the substance of Dr. Kilpatrick's report. Plaintiffs retained Dr. Kilpatrick to show that questions common to the damages class predominate over individual questions. ECF No. 264-1 at 22. To accomplish this task, Dr. Kilpatrick provided a formula for calculating class-wide damages:

Unimpaired Property Value – Impaired Property Value = Damages.

ECF No. 254-4 at ¶ 9.

The Unimpaired Property Value ("Unimpaired") term represents the value of properties in the class area if the Arkema Incident had never happened. Since this term predicts hypothetical property values, it is entirely theoretical. To populate this term, Dr. Kilpatrick used the Greenfield Automated Valuation Model ("GAVM"). He started with transaction data for five MLS areas, "encompass[ing] all of the properties in the 7-mile ring plus additional 'control areas' outside of the 7-mile area." ECF No. 231-4 at ¶ 55. He also included data from the Chambers County Certified Appraisal Roll, Chambers County Tax Parcels, Harris County Certified Appraisal Rolls, Liberty County Certified Appraisal Rolls, and Google Earth imagery. *Id.* He limited the data to

transactions that occurred between September 1, 2016, and August 31, 2018 (the two-year period around the Incident). *Id.* Next, he calibrated this model using the data from the putative class area for the one-year period before Hurricane Harvey. *Id.* at ¶ 60. The calibration indicated that four variables were important for sales prices: Tax Assessed Value ("TAV"), Sales Date, Area 2 (denoting location in one specific MLS area), and In/Out (whether the property was inside or outside of the class area). *Id.* at ¶ 61. Dr. Kilpatrick then validated the GAVM on the data from the two-year period around the Incident. *Id.* at ¶ 63. According to the International Association of Assessing Officers, tax assessment ratio studies should feature a Coefficient of Dispersion under 10% for newer single-family residential properties in homogenous areas, and under 15% for older and more heterogenous areas. *Id.* at ¶ 62. Dr. Kilpatrick found that his GAVM had a Median Absolute Deviation of 9.28%, so he concluded that his model was a good fit. *Id.* at ¶ 63. Dr. Kilpatrick also noted that his GAVM had a Median Deviation of -0.72%, suggesting that it was unbiased. *Id.*

The Impaired Property Value ("Impaired") term, meanwhile, is designed to represent the actual value of the properties in the class area after the Arkema Incident. Dr. Kilpatrick did not rely on multiple regression to populate this term. Instead, he compared trendlines for two areas. *Id.* at ¶¶ 113–16. For the "Inside" trendline, Dr. Kilpatrick used monthly per-square-foot average sale prices for homes in the class area. For the "Outside" trendline, he used prices for homes that were located near the class area. Using data from the year before Hurricane Harvey, Dr. Kilpatrick calculated a trendline that indicated that prices for Inside properties were increasing by 19.5% per year ("Inside/Before"). *Id.* at ¶¶ 116–19. The data for Outside properties produced a trendline that indicated that prices were increasing by 8% per year ("Outside/Before"). *Id.* Next, Dr. Kilpatrick calculated trendlines for both areas for the year after the Incident ("Inside/After" and

"Outside/After"). Dr. Kilpatrick manually anchored the After trendlines at the price predictions for August 2017 from his Before trendlines. *Id.* at ¶ 123. He then used all four trendlines to estimate prices in August 2018.[9] *Id.* at ¶ 125. He found that the Inside/After trendline predicted prices to be 16.21% lower than the Inside/Before trendline, while the Outside/After trendline predicted prices to be 4.08% lower than the Outside/Before trendline. *Id.* at ¶ 126. Dr. Kilpatrick then subtracted one figure from the other to conclude that "within one year of the Arkema Explosion, actual home prices in the 7-mile zone had decreased 12.12% more than they would have decreased without that explosion." *Id.* at ¶ 127.

Dr. Kilpatrick did not stop there. He reasoned that the 12.12% figure was "a *floor* for damages, since research shows us that homes in an affected area are less likely to transact, are less likely to fully and immediately inculcate new knowledge, and thus are not likely to be 'at equilibrium.' " *Id.* To support this opinion, Dr. Kilpatrick examined five case studies. Those case studies concerned "air and soil-related contamination including industrial products," and indicated diminutions in property values of between 5% and 42%. *Id.* at ¶ 134. Extrapolating from these case studies, Dr. Kilpatrick opined that "[c]omparable case studies would indicate a somewhat higher equilibrium loss in value, and as such a conservative estimate of the actual decline in value would be in the range of 20%." *Id.* at ¶ 141. When Dr. Kilpatrick conducted his case study analysis, he did not know the contaminants at issue in the Arkema Incident. ECF No. 268-2 (Exhibit B) at 61:3-5, 103:22–104:7. Finally, Dr. Kilpatrick applied the 20% diminution figure to the Unimpaired

[9] Dr. Kilpatrick calls the predictions for August 2018 from his Inside/After and Outside/After trendlines the "Aug 2018 Actual Price[s]." *Id.* at ¶ 126. This is misleading. The actual monthly average per-square-foot sales price inside the class area in August 2018 was $107.80, and the average outside was $93.43. *Id.* at ¶ 122. The "Aug 2018 Actual Prices" spit out by Dr. Kilpatrick's trendlines, meanwhile, were $97.85 (Inside) and $91.64 (Outside). *Id.* at ¶ 126.

value term from his GAVM to present a final estimate for diminution in value for the class: $366,764,884.28. ECF No. 231-4 at ¶ 145.

2. Dr. Kilpatrick's Trendline Methodology is Unreliable

The central problem with Dr. Kilpatrick's trendline methodology is that it is unreliable. For Dr. Kilpatrick's 12.12% diminution estimate to pass muster under *Daubert*, the Court must find that Dr. Kilpatrick's methodology reliably shows that the Arkema Incident caused the divergence in price trends in the following year. Put another way, Dr. Kilpatrick must reliably demonstrate that the divergence in price trends was not due to underlying differences between the Inside and Outside areas. Critically, however, Dr. Kilpatrick does not show that the Outside properties resemble the Inside properties. *See* ECF No. 253-6 at 37 ("The Kilpatrick Report provides no information on the characteristics of the control area and no comparison of characteristics between areas inside and outside of the Proposed Class Area."). Without evidence that the two areas are similar, it is impossible reliably to conclude that the post-Incident divergence is traceable to stigmatic decrements from the Arkema Incident.

Dr. Kilpatrick's failure to control for (or even address) differences between the two areas is a serious lapse, particularly given that the data show real differences between the two areas. For example, Dr. Kilpatrick includes MLS Area 32 in the Outside area, even though there are no properties in Area 32 in the proposed class. ECF No. 253-6 at 38. The median household income and median home value in Area 32 are both more than double the corresponding figures for the Inside area. *Id.* These differences suggest that the post-Incident divergence may be due to intrinsic differences between the Inside and Outside areas, rather than the stigmatic effects of the Arkema Incident. More broadly, the Outside area features a median population age 9.5 years older than the

Inside area, a median household income that is 61.3% higher, and median home values that are 68.3% higher. *Id.* Again, these differences suggest that in subtracting price trends for the Outside area from the Inside area, Dr. Kilpatrick has isolated effects that have nothing to do with the Arkema Incident. Dr. Kilpatrick also provides no support for his contention that the Outside and Inside areas were impacted similarly by Hurricane Harvey. *See* ECF No. 231-4 at ¶ 114. Dr. Kilpatrick claimed that the purpose of subtracting one area from the other was to control for the effects of the storm. But he did not analyze any data or area characteristics to demonstrate that the two areas bore the brunt of the hurricane in the same way. Moreover, the actual trendlines themselves suggest that price differences in the two areas are not due to the Arkema Incident. In the year before the Incident, Inside prices increased by 19.5%, while Outside prices increased by only 8%. The fact that the two areas experienced such different trends before the Incident makes it impossible to conclude (without additional controls) that the post-Harvey trend difference is due to the Arkema Incident.

Dr. Kilpatrick also never evaluates any goodness-of-fit measures for his trendline analysis. Plaintiffs, for their part, attempt to direct the Court's attention the Median Absolute Deviation and Median Deviation figures that Dr. Kilpatrick provides for his GAVM. Those measures of statistical precision only concern the *Unimpaired* term, however. Yet it is the *Impaired* term that Plaintiffs need to demonstrate that the Arkema Incident caused a diminution in property values. It is the *Impaired* value term that Plaintiffs need to quantify their diminution damages. And it is the *Impaired* value term that Dr. Kilpatrick fails to validate with goodness-of-fit measures. This too undermines the reliability of Dr. Kilpatrick's opinions.

This Court is not the first to find Dr. Kilpatrick's sales trend analysis unreliable. In *Cotromano*, the district court excluded Dr. Kilpatrick's testimony in no small part because "[h]is

methodology oversimplifies the complex factors that influence home pricing trends, as it makes no accommodation for consideration of important individual variables that typically influence home values, such as age, size, condition or property uses." 2018 WL 2047468, at *18. In that case, Dr. Kilpatrick could not "reliably use sales trend analysis to determine a single percentage diminution" for a large class areas containing thousands of properties. *Id.* at *19. The same result follows here. Based on the paucity of controls in Dr. Kilpatrick's trendline analysis, it is simply not true that "any difference in [Dr. Kilpatrick's] trend lines could only be ascribed to [the Arkema Incident." ECF No. 281 at 21–22. By failing to control for (or even recognize) differences between the class and control areas, Dr. Kilpatrick committed a fatal error. The Court therefore finds his methodologies and opinions unreliable and grants Arkema's Motion to Exclude on that basis. *See Cannon v. BP Prod. N. Am., Inc.*, 2013 WL 5514284, at *7 (S.D. Tex. Sept. 30, 2013) (Costa, J.) ("In actuality, [the expert] does not, and cannot, know exactly what characteristic he isolated with his regression model—it could have been sulfur dioxide emissions, exceedances, events, bad press about the Refinery, or any other difference between the class area and control area that was not accounted for in his model, including non-BP related variables like neighborhood crime rates or the effects of Hurricane Ike."); *cf. Comcast Corp. v. Behrend*, 569 U.S. 27, 35 (2013) ("[A] model purporting to serve as evidence of damages in this class action must measure only those damages attributable to that theory.").

3. Dr. Kilpatrick's Case Study Methodology Is Unreliable

In light of the above ruling, the Court need go no further on Dr. Kilpatrick's opinions. Still, for the sake of completeness, the Court also concludes that Dr. Kilpatrick's case study approach falls short under *Daubert*.

Appraisers generally turn to case studies if there is no relevant data. *See* Thomas Jackson & Randall Bell, *The Analysis of Environmental Case Studies*, The Appraisal J. 86, 86 (Jan. 2002) ("[C]ase studies are utilized when there is a lack of direct market data or where analyses of direct market data need additional support."). Dr. Kilpatrick violated this tenet when he used case studies to project diminution damages instead of using the available data. If Dr. Kilpatrick believed that prices in August of 2018 did not represent "the full equilibrium value impact," ECF No. 254-4 at ¶ 37, he should have looked at the longer dataset that he had at his fingertips. *See Exxon Mobil Corp. v. Albright*, 433 Md. 303, 423 (2013) (finding Dr. Kilpatrick's decision to use meta-analysis, case studies, and a contingent valuation survey to speculate about prices rather than using the available data to be "seriously concerning"). What better way to determine long-term impact then to examine long-term data?

In addition, Dr. Kilpatrick's case study methodology is itself unreliable. Dr. Kilpatrick examined five case studies that he believed were "comparable to the Arkema situation." ECF No. 231-4 at ¶ 134. But Dr. Kilpatrick did not know the contaminants at issue in the Arkema Incident, so he had no reliable basis for determining that the case studies were comparable.[10] *See* ECF No. 281-1 at 61:3-5 ("Q. Okay. Do you know what contaminants were allegedly emitted from the Arkema facility? A. Offhand, No."). Moreover, Dr. Kilpatrick did not analyze the case studies themselves in any detail. Rather, he simply asserted that they all "included air and soil-related

[10] USPAP Advisory Opinion 9 ("AO-9") makes clear that appraisers should consider: "whether the contamination discharge was accidental or permitted; . . . the contamination constituents; [and] the contamination conveyance[.]" ECF No. 268-2 (Exhibit F) at 78. AO-9 is not a USPAP standard, but it still indicates that accounting for the contamination at issue is important. This makes intuitive sense. Environmental stigma is tied to public perception. Unless the public perceives all contamination similarly, appraisers should naturally consider the type of contamination at issue.

contamination including industrial products." ECF No. 231-4 at ¶ 134. A closer look, however, indicates that the case studies concerned different contaminants and resulted from activities that "resulted from decades of industrial operations." ECF No. 253-6 at 26–27. By contrast, the Arkema Incident was a short-term accidental discharge that released a unique blend of contaminants. These differences render Dr. Kilpatrick's attempt to extrapolate from case studies more questionable still.

What's more, when it came time to extrapolate from the case studies, Dr. Kilpatrick failed to show his work. An expert's opinion "must have some demonstrable and reliable basis in underlying facts." *LeBlanc ex rel. Est. of LeBlanc v. Chevron USA, Inc.*, 396 F. App'x 94, 100 (5th Cir. 2010). Here, Dr. Kilpatrick said that the case studies "would support a diminution in value of at least 14%, the baseline finding in the Rocky Flats matter, and perhaps as high as 42%, the assessor finding in the Asarco matter." ECF No. 231-4 at ¶ 140. Then, Dr. Kilpatrick concluded: "Comparable case studies would indicate a somewhat higher equilibrium loss in value, and as such a conservative estimate of the actual decline in value would be in the range of 20%." *Id.* at ¶ 141. But Dr. Kilpatrick provided no scientific methodology for his 20% figure. He testified that he came up with it after talking "to the appraisers who were involved in the Rocky Flats matter . . . a couple years ago when they concluded their study." ECF No. 281-1 at 126:25–127:3. But this superficial methodology is neither repeatable nor reliable. There is simply no way to evaluate Dr. Kilpatrick's hypothesis that 20% is the appropriate figure.

As a result, the Court also grants Arkema's Motion because it finds Dr. Kilpatrick's case study methodology to be unreliable.

4. Summary

The Court finds that Dr. Kilpatrick's opinions on diminution in value are unreliable.[11] Dr. Kilpatrick failed to consider (and control for) differences between the Inside and Outside areas. The Court therefore cannot conclude that his 12.12% diminution figure is reliably attributable to the Arkema Incident. Dr. Kilpatrick also never provided statistics to validate his trendline analysis. In addition, Dr. Kilpatrick's case study analysis is deeply flawed. He did not know the contaminant at issue, so he could not reliably conclude that the case studies were apt. Plus, he used case studies instead of readily available long-term data. And his calculation of the final 20% figure was not based on any discernible scientific methodology. For these reasons, the Court **GRANTS** Arkema's Motion and excludes Dr. Kilpatrick's opinions under *Daubert*.[12]

E. Arkema's Motion to Exclude Mr. Marc Glass

Arkema's next Motion targets Mr. Glass. Plaintiffs rely on Mr. Glass for a few different arguments on certification. Plaintiffs use Mr. Glass to support their request for a site characterization and remediation program. ECF No. 264-1 at 10. Plaintiffs use Mr. Glass to establish redressability for standing purposes. ECF No. 290 at 6. And Plaintiffs use Mr. Glass to

[11] The Court notes that the circularity of the *Daubert* inquiry here could result in some confusion. If, for example, the Court's decision not to exclude Dr. Li's opinions were to be overturned on appeal, that could raise an issue as to whether the Court's analysis on Dr. Kilpatrick must also be overturned. The Court therefore makes clear that it does not require Dr. Li's opinions to exclude Dr. Kilpatrick. Even without Dr. Li's work, the Court would still find Dr. Kilpatrick's attempt to draw causal conclusions from his trendline analysis unreliable because Dr. Kilpatrick does not show that the two areas are similar (or control for the underlying differences). This error is of sufficient magnitude that Dr. Li's analysis is not necessary.

[12] Because the Court grants Arkema's Motion for the reasons set out above, it does not delve into Defendant's critique of Dr. Kilpatrick's GAVM. Without the Impaired value term, Dr. Kilpatrick's entire opinion on diminution damages crumbles.

show that exposure can be determined on a class-wide basis such that the class is cohesive. *Id.* at 13. Ultimately, the Court finds that Mr. Glass's opinions pass muster under *Daubert*.

1. Whether Mr. Glass's Remediation Opinions Are Relevant and Reliable

Arkema's primary argument against Mr. Glass is that his opinion on scalable cleanup methodology should be excluded as irrelevant and unreliable. Arkema supports this argument with three points. First, Arkema contends that this opinion is based on the unsupported premise that cleanup is necessary in the class area. Second, Arkema submits that Mr. Glass lacks a specific methodology for sampling and site characterization. Third, Arkema says that Mr. Glass lacks a scientific basis for his conclusion that the decontamination plan is scalable. The Court finds that none of these points warrants exclusion under *Daubert*.

i. Whether cleanup is necessary in the class area

Arkema's first argument on the necessity of cleanup in the class area does not compel exclusion. In his deposition, Mr. Glass explained that there is "information already in the record that demonstrates that additional actions towards remedial evaluation are warranted and that there are soil samples that indicate that, so I think we should move forward with additional action on those properties." ECF No. 282-2 (Exhibit B) at 83:17-23. Subsequently, Mr. Glass stated that existing samples show "that we exceed screening level criteria or health-based criteria which are appropriate in an early phase of investigation." *Id.* at 86:19-22. Consequently, Mr. Glass concluded that those samples "indicate that based on what we know now, remediation is needed." *Id.* at 86:23-24. Mr. Glass also said that "[t]hose samples where 4.8 picograms per gram is exceeded are areas right now that would be evaluated as needing remediation." *Id.* at 90:10-13. And to the degree that

Mr. Glass equivocated in his October 2021 deposition about the need for remediation, his uncertainty was centered around just how much remediation would be necessary:

> Q. And so at this point in time, you can't definitively say that the soil itself needs to be cleaned up or removed, right? You need more information?
> A. Well, [where] the health-based screening criteria are exceeded, that indicates that remediation in that area is warranted. . . . [But] [y]ou need more samples to make final remediation decisions. The operating decision at this point is going to be . . . yes, you do have to do that, but my recommendation would be to conduct additional sampling to try to constrain, or if necessary, expand the area requiring remediation.

Id. at 104:7–105:2. Mr. Glass has demonstrated sufficient support for his opinion that cleanup is necessary in the class area.

Arkema, for its part, points to a few quotations that suggest uncertainty about the need for cleanup. Plaintiffs' risk assessment expert Ms. Shannon Thompson stated during her deposition that "additional sampling must be conducted to ascertain whether and to what extent any specific property may have been actually harmed or present an actual risk due to dioxins." ECF No. 265-2 (Exhibit B) at 63:9-19. Mr. Glass also admitted at one point that he does not have "all the information [he] need[s] to make [the] determination" as to whether property remediation will be necessary. ECF No. 265-2 (Exhibit D) at 146:23–147:3. Arkema therefore submits that Mr. Glass's opinion on scalable cleanup methodology does not "fit" the facts of this case because there is no evidence that cleanup is necessary. But even though these quotes indicate some uncertainty, uncertainty does not preclude the admission of Mr. Glass's opinion. Mr. Glass based his opinion regarding the need for a scalable cleanup methodology on samples that exceed screening levels, the testimony of other experts, and his experience conducting similar remediation projects. Arkema's argument regarding the lack of evidentiary support for cleanup goes more to the merits of Plaintiffs' case than to *Daubert*. The Court therefore finds that Mr. Glass has a reliable basis for

his opinion that remediation is necessary in the class area, and that his opinion on the existence of a scalable cleanup methodology fits the facts of this case.

ii. Whether Mr. Glass needs to provide more details on sampling

Arkema's second argument is also better left for the merits of Plaintiffs' case. Arkema takes issue with the fact that Mr. Glass "could not say how many samples would need to be taken, or on what properties those samples would need to be taken and how the site characterization should take place." ECF No. 265 at 10. To Arkema, this admission means that Mr. Glass lacks a "scalable" methodology for further sampling and site characterization. But the Court can—and does—find Mr. Glass's opinion relevant and reliable without these additional details. Mr. Glass extrapolated from the samples and his experience in environmental decontamination to formulate a multi-step plan for remediation that begins with additional sampling. Even absent exact details regarding further sampling, Mr. Glass's opinion is both relevant and reliable. Whether his opinion is sufficiently specific to support Plaintiffs' request for injunctive relief is a question that must be answered on Plaintiffs' Renewed Motion for Class Certification. But under *Daubert*, this argument is no basis for exclusion.

iii. Whether Mr. Glass's opinion on scaling remediation is reliable

Arkema's third argument is that Mr. Glass's opinion on the scalability of the cleanup program is not based on scientific methodology. Arkema notes that Mr. Glass "fails to explain how cleanup will be conducted on properties with different land uses, despite admitting that there are 15 different types of land uses in the proposed Class Area and that cleanup standards for each type of land use could be different." ECF No 265 at 13. The Court is not persuaded by Arkema's stance.

Mr. Glass's remediation proposal from his July 2021 report mirrors the stepwise process from CERCLA: (1) Preliminary Assessment; (2) Remedial Investigation/Feasibility Study (Site characterization); (3) Remedy Decision; (4) Remedial Design/Remedial Action; (5) Construction Completion; (6) Post Construction Completion; and (7) Site Reuse/Redevelopment. ECF No. 265-2 (Exhibit C) at 21. In his report, Mr. Glass proposed cleanup goals for remediation: 4.8 pg/g for dioxin and dioxin-like compounds in exterior soil and 20 pg/ft^2 for interior spaces. *Id.* at 21–22. Mr. Glass considered nine criteria—including protecting human health and the environment, short-term effectiveness, long-term effectiveness, implementability, cost, and acceptance—to select the best of four possible alternatives for cleanup (no action, capping in place, excavation and retrieval with on-site storage/capping, and excavation and retrieval with off-site disposal). *Id.* at 22–23. Mr. Glass chose excavation and retrieval with off-site disposal, as this method would restore impacted properties without long-term maintenance. *Id.* at 23–24. This method is also more scalable than on-site storage/capping because it does not require space in the class area for contaminated materials. *Id.* As for interior remediation, Mr. Glass favored a multi-step cleaning process. *Id.* at 24–25. Mr. Glass contended that the process should be implemented for a given property after sampling "a minimum of six dust wipe samples from cleaned interior surfaces, including the attic area, with quality/assurance/quality control samples collected at a frequency of one field blank and one duplicate per 20 samples, analyzed for the Arkema [constituents of concern]." *Id.*

After reviewing these details, the Court concludes that Mr. Glass's opinion on class-wide cleanup approaches is rooted in scientific methodology, the facts of this case, and his own expertise. Arkema suggests that Mr. Glass does not support his opinion on the scalability of this approach, but there is no reason to doubt the reliability of Mr. Glass's conclusion on that front. There is no statistical test for scalability. And even though the class area contains different land

uses, Mr. Glass need not lay out a plan for each and every property for his opinion to satisfy the *Daubert* inquiry. The test here is relevance and reliability, not complete comprehensiveness. The remediation levels that Mr. Glass proposes are linked to Regional Screening Levels ("RSLs"), which have a basis in the scientific and regulatory literature. *See e.g.*, ECF No. 231-5 at 24 (noting that the California Department of Toxic Substances Human and Ecological Risk Office recommends targeting the EPA RSL of 4.8 pg/g for certain residential soils that have been contaminated with dioxins). And Mr. Glass lays out a measured and considered approach for implementing those RSLs in his report. As a result, the Court finds that Mr. Glass's opinion on the scalability of a class-wide cleanup methodology is reliable.

2. Whether Mr. Glass Is Qualified to Opine on Health Risks in the Class Area

Next, Arkema submits that "Mr. Glass is not qualified to offer an opinion regarding any 'increased health risk,' and his opinion is not based on a reliable scientific methodology." ECF No. 265 at 13. Specifically, Arkema takes issue with Mr. Glass's opinion that "[i]ncreased health risk is present in the class area from Dioxin and Dioxin-like compounds deposited by the Arkema fires." ECF No. 265-2 (Exhibit C) at 5.

Mr. Glass is not a toxicologist. He is an expert in environmental consulting and management "skilled in the evaluation and remediation of environmental contamination." *Id.* at 32. The Court therefore understands Arkema's contention that Mr. Glass is unqualified to opine about health risks. The Court also acknowledges that some of the other evidence in the record on health risks is equivocal. For instance, in Ms. Thompson's deposition, she testified that identifying a contaminant as a Contaminant of Potential Concern ("COPC") is "not a quantification of risk," since quantification requires a "comprehensive human health risk assessment." ECF No. 265-2

(Exhibit B) at 45:1–46:5. Ms. Thompson also conceded that no one in this case has conducted a comprehensive human health risk assessment. *Id.* Furthermore, Ms. Thompson engaged in the following exchange with Arkema's counsel at her deposition:

> Q. So at present, without having done a human health risk assessment, is it accurate to say that you have no opinion as to whether any chemicals allegedly released from the Arkema plant actually pose an imminent and substantial risk to the proposed class area; is that correct?
> A. Yeah, I would have no opinion about that until I was able to conduct that analysis . . .
> Q. Is it [fair] to say that in your opinion, additional sampling must be conducted to ascertain whether and to what extent any specific property may have been actually harmed or present[s] an actual risk due to dioxins?
> A. Yeah, I would agree with that.

ECF No. 265-2 (Exhibit B) at 52:15-22, 63:9-14.

Nevertheless, samples from the class area have featured dioxin readings that exceed the RSL and 1E-6 carcinogenic risk level (4.8 pg/g). Dioxins and dioxin-like compounds do not easily degrade, and concentrate in the fatty tissue of humans over time. ECF No. 231-5 at 5. Dioxins "have been identified by the [EPA] as a Group B2 probable human carcinogen and human studies have found an association between 2,3,7,8-TCDD and lung cancer, soft-tissue sarcomas, lymphomas, and stomach carcinomas." *Id.* at 24. Dioxins have also produced non-carcinogenic chronic health effects in animal studies. *Id.* Based in part on the health-risks posed by dioxins, Ms. Thompson herself proposed a remediation goal for dioxins in residential soil of 4.8 pg/g, which she described as a conservative risk-based screening level for residential exposure that is consistent with a carcinogenic risk of 1E-6. *Id.* at 6, 13–15.[13] Ms. Thompson further stated that RSLs "represent[] the most current [EPA] approved toxicity data and exposure factors," and that using

[13] For indoor dusts, meanwhile, Ms. Thompson concluded that the proposed remediation goal should be 12.149 pg/ft^2 based on World Trade Center Benchmarks, "adjusted for a carcinogenic risk of 1E-6, or the best achievable reporting limit for dioxins." *Id.* at 6.

RSLs "is an industry best practice when conducting human health risk-based screening level assessments and identifying COPCs." *Id.* at 14.

Taken together, this evidence provides support for the proposition that "[i]ncreased health risk is present in the class area from Dioxin and Dioxin-like compounds deposited by the Arkema fires." ECF No. 265-2 (Exhibit C) at 5. Mr. Glass's experience in remediating environmental contamination qualifies him to opine that the exceedance of a carcinogenic risk level indicates an increased health risk. To wit, Mr. Glass testified at the *Daubert* hearing that he considers RSLs to be "health-based" risk standards because they incorporate health issues to set a level that "regulatory agencies can use to make decisions about whether sampling is needed or not." ECF No. 308 at 65:23–66:18. Even without a forward-looking risk assessment, Mr. Glass clarified that he could opine that there is an elevated risk to human health because of the presence of a toxic contaminant in excess of the RSL. *Id.*; *see* ECF No. 231-5 at 24 (noting that California agencies use the RSL for some dioxin remediation efforts). The Court therefore finds that Mr. Glass's opinion on the risk to human health posed by dioxins from the Arkema Incident in the class area is sufficiently reliable under *Daubert*, and that he is qualified to deliver it.

What's more, even if Mr. Glass is not qualified to offer this opinion himself, he may incorporate it into his work if it is offered by Plaintiffs' other experts. Ms. Thompson's work indicates that increased health risk is present in the class area from dioxins released during the Arkema Incident. *See e.g.*, ECF No. 231-5 at 24 ("The rural setting of the community surrounding the Arkema Facility is consistent with this type of scenario where farming and raising of animals could occur, supporting the use of a remediation cleanup value of 4.8 pg/g for dioxins to ensure the protection of human health."). And Dr. Troast wrote that "[t]he finding of TCDD deposited in the soils described by Dr. Kaltofen and the report of Shannon Thompson that quantified the other

exposures to TCDD demonstrate that the carcinogenic material was released and is available for the population to encounter." ECF No. 267-2 (Exhibit C) at 6. Thus, even if Mr. Glass cannot offer this opinion himself, he can rely on this opinion as a predicate for his other work because it also appears elsewhere in the record.

3. Whether Mr. Glass Reliably Opines on the Mobilization of Contaminants

Arkema's next critique of Mr. Glass is that his "opinions regarding possible mobilization of dioxins 'within and beyond the class area' are not based on any data or analysis specific to this putative class." ECF No. 265 at 16. Here, Arkema takes issue with the fact that "Mr. Glass has not opined that dioxins created from the Arkema events were in fact mobilized within the proposed Class Area. Rather, his opinion is that dioxins may be mobilized within and beyond the proposed Class Area[.]" *Id.* Arkema directs the Court to Mr. Glass's 2021 deposition, where he stated that he was not aware of any findings that outdoor contaminants have actually concentrated above background levels in the class area "because we haven't collected sampling after the deposition occurred that would capture the time lapse between when the deposition occurred and tracking would have occurred." ECF No. 265-2 (Exhibit E) at 191:8-21.

The crux of Mr. Glass's opinion on mobilization (also known as resuspension or re-entrainment) is as follows:

> Once on land (residential yards, agricultural soils, public spaces), natural or human-enhanced erosion and transport can cause Dioxin and Dioxin-like compounds to be moved between the air, land, and aquatic environments. Dioxin and Dioxin-like compounds are hydrophobic and do not dissolve[] easily in water but interact strongly with natural organic matter in soil. The affinity for organic matter is why Dioxin and Dioxin-like compounds tend to be transported along with soil or dust particles to which they bind (Strandberg et al., 2011). Simply put, they stick to soils, but soils get moved around a lot.

> Primary human exposure to soil generally occurs near the surface (upper two feet) through activities like working or playing in the yard, gardening/farming, or by human or pet tracking of soil into the home. Soil may also be inhaled if resuspended in the air or tracked into building interiors. Settled dust can re-enter the air when the home is vacuumed or swept, or people walk thorough it, and can be transferred through ventilation systems. While not exclusive to dioxin and dioxin-like compounds, indoor levels of particulate air pollution may be concentrated well above outdoor levels.
>
> . . .
>
> Arkema-related particulates have been deposited onto soils and other surfaces in the Crosby area. Particulate deposits onto impermeable (rooftops and roadways) or semi-permeable surfaces (vegetation) will most likely have been washed to soil by precipitation. Soil containing Arkema-related particulates may be eroded and transported during precipitation events, providing new routes of exposure to area residents and wildlife receptors. Bioamplification through the food chain, whereby domestic animals (cows, chickens) and wildlife (deer, ducks, other birds) and other wildlife ingest contaminants which become concentrated within fatty tissues. As these animals move throughout the area and are consumed by other animals or humans, this creates new routes of exposure that can be concentrated well above environmental levels (Schecter, 2012).

ECF No. 231-2 at 20. The Court recognizes that some of this opinion is couched in contingent language: "generally occurs[,] . . . may also be inhaled[,] . . . can re-enter the air[,] . . . can be transferred[,] . . . [and] may be concentrated[.]" *Id.* Mr. Glass also fails to point to specific data that demonstrates that mobilization is occurring in the class area.[14] Nevertheless, the Court finds Mr. Glass's opinion on mobilization to be reliable.

"In assessing the 'reliability' of an expert's opinion, the trial court may consider a list of factors including: 'whether a theory or technique . . . can be (and has been) tested,' 'whether the theory or technique has been subjected to peer review and publication,' 'the known or potential rate of error,' 'the existence and maintenance of standards,' and 'general acceptance' of a theory in the 'relevant scientific community.' " *Hinson*, 2016 WL 3199353, at *1 (E.D. Tex. June 9, 2016)

[14] Plaintiffs contend that Mr. Glass's opinion is supported by an indoor sample taken from a vacuum bag, but Mr. Glass himself never referred to this sample in his work.

(quoting *Daubert*, 509 U.S. at 593–94). It is also relevant whether the expert's theory came from litigation or independent research. *Advisory Committee Notes to 2000 Amendment* of FED. R. EVID. 702. Here, as detailed by Mr. Glass, Dr. Kaltofen, and Ms. Thompson, the theory of mobilization has been subjected to peer review and publication and appears generally accepted within the relevant scientific community. *See* ECF No. 231-2 at 20 (citing published studies from several authors on dioxins' proclivity for mobilization and resuspension); *see* Patricia V. Cline, *Understanding Dioxin-Like Compounds in Indoor Dust*, 82 (U.S. E.P.A. Final Technical Report, 2014) ("If a home was thoroughly cleaned without first remediating the soil, house dust concentrations would increase again over time from tracking in of contaminated soil."). This theory also exists separate and apart from the present litigation. The Court will not require Plaintiffs to present sampling data over time to prove the existence of resuspension and mobilization in the class area. As a result, the Court finds Mr. Glass's opinion on mobilization of contamination to be reliable.

4. Whether Mr. Glass's Underlying Data is Reliable

Finally, Arkema argues that "Mr. Glass's opinions should be excluded as unreliable because the data upon which he bases those opinions is unreliable." ECF No. 265 at 18. Arkema supports this argument with two specific contentions. First, Plaintiffs' data has not been validated. Second, Mr. Glass failed to account for laboratory qualifiers. Ultimately, however, the Court finds that Mr. Glass's approach to the data suffices under *Daubert*.

i. Issues with Data Validation

Arkema first complains that Mr. Glass did not adequately validate his data. Data validation is a process for examining the quality of a dataset. *See* ECF No. 282-2 at 262:21–263:1 ("There

[are] different levels of data validation, but it's basically an assurance process to have confidence that the laboratory results are representative."). Ms. Dana Hebert, Arkema's expert in data validation and quality, noted that a proper validation confirms the quality of the data and should be performed by an independent entity not associated with sample collection or analysis. ECF No. 265-2 (Exhibit L) at 4–5. Mr. Glass, who participated in sample collection, testified that he performed either a "level 1 or level 2" data validation by considering the quality of the data. ECF No. 282-2 at 266:3.[15]

As the Sixth Circuit has recognized, most arguments regarding the inaccuracy of an underlying dataset are "unpersuasive" because they "fundamentally confuse[] the *credibility* and *accuracy* of [the expert's] opinion with its *reliability*." *In re Scrap Metal Antitrust Litig.*, 527 F.3d 517, 529 (6th Cir. 2008) (emphasis in original). "The task for the district court in deciding whether an expert's opinion is reliable is not to determine whether it is correct, but rather to determine whether it rests upon a reliable foundation, as opposed to, say, unsupported speculation." *Id.* at 529–30. And this is not a case where, for example, Mr. Glass pulled the data "out of thin air[.]" *Navarro v. Procter & Gamble Co.*, 2021 WL 868586, at *6 (S.D. Ohio Mar. 8, 2021). Here, the Court does not find that the dispute over data validation warrants exclusion.

Arkema's cited caselaw to the contrary does not control. While the Second Circuit did say in *Forte* that "[a] failure to validate data by itself can constitute grounds for excluding an expert report," this case is distinguishable. *Forte v. Liquidnet Holdings, Inc.*, 675 F. App'x 21, 24 (2d Cir. 2017). In *Forte*, the expert relied on a dataset without conducting any form of independent

[15] Arkema contends that there is no such thing as a level 1 data validation. But at the *Daubert* hearing, Mr. Glass clarified that he performed such a validation when he compared the materials submitted to the laboratory, the chain of custody records, and the requested analyses with the data that the lab returned. ECF No. 308 at 51:17-25.

verification. *Id.* at 24–25. By contrast, Mr. Glass helped collect the data here and did conduct some level of data verification. Arkema's other key case, *Jacked Up, LLC v. Sara Lee Corp.*, is also inapposite. 291 F. Supp. 3d 795 (N.D. Tex. 2018). There, the district court focused on the fact that the data was "unverified." *Id.* at 806. Again, however, here there is no question that Mr. Glass performed a data verification. ECF No. 265 at 19, 19 n.9. The Court therefore concludes that Mr. Glass's data validation efforts (or lack thereof) go to the weight of his testimony and are not proper grounds for exclusion.

ii. Issues with Laboratory Qualifiers

Arkema also submits that Mr. Glass's failure to deal with lab qualifiers is a fatal flaw. Twenty-two of the twenty-nine samples that Mr. Glass relied upon to produce parts of his expert report contained lab qualifiers. According to Ms. Hebert, using data that has been flagged with qualifiers without assessing those qualifiers "renders the opinions that rely upon [such data] scientifically unreliable." ECF No. 265-2 (Exhibit J) at 5. Plaintiffs' experts agree that certain qualifiers (like R-qualifiers) undermine the value of data pertaining to that constituent. ECF No. 265-2 (Exhibit B) at 93:22-25. Originally, however, Mr. Glass did not see, much less consider, qualifiers for seven of his samples. ECF No. 265 at 23. When confronted with this situation, Mr. Glass said that he was "quite sure that [the qualifiers] are in [his] database," and that he would "look at each individual one of those to see if there is any impact on the analysis." ECF No. 265-2 (Exhibit E) at 279:6–280:15.

At the *Daubert* hearing, Mr. Glass stated that he had since reviewed the missing qualifiers. ECF No. 308 at 61:24–63:21. And he confirmed that after further review, the missing qualifiers did not change his opinions. *Id.* This position aligns with Plaintiffs' other evidence on qualifiers.

During Ms. Thompson's deposition, she analyzed the missing qualifiers associated with one of the seven samples. ECF No. 265-2 (Exhibit B) at 103:5-7. Ms. Thompson reevaluated the TEQ concentration for that sample based on the most extreme assumption possible: that it was necessary to reject the data from all constituents with R-qualifiers.[16] *Id.* at 107:16-22. That reevaluation changed the TEQ value of the sample from 118 to 114, which was still "well above the risk-based residential screening value provided with the RSL tables of 4.8." *Id.* Taken together, Mr. Glass's assurances and Ms. Thompson's analysis of the R-qualifiers confirm that this issue does not warrant the exclusion of Mr. Glass's opinions.

5. Summary

The Court rejects Arkema's arguments for excluding Mr. Glass's opinions. In addition to the above analysis, the Court notes that it was impressed by Mr. Glass's competence and reliability during his appearance at the *Daubert* hearing. His testimony before the Court confirmed that his approach passes muster. The Court therefore finds that Mr. Glass's opinions are relevant and reliable; Arkema's Motion to Exclude the Opinions of Mr. Glass is **DENIED**.

F. Arkema's Motion to Exclude Dr. Marco Kaltofen

Plaintiffs make clear the high-level conclusion that they wish to draw from Dr. Kaltofen's report: "Dr. Kaltofen's conclusion can be summarized in one sentence: 'Arkema's releases increased the concentrations of chemical contaminants in the class area.' " ECF No. 287 at 5 (citing ECF No. 109-3). Arkema, for its part, contends that Dr. Kaltofen's opinions are unreliable because

[16] Toxic equivalency (TEQ) values "are a weighted quantity measure based on the toxicity of each member of the dioxin and dioxin-like compounds category relative to the most toxic members of the category." Dioxin and Dioxin-like Compounds; Toxic Equivalency Information; Community Right-To-Know Toxic Chemical Release Reporting, 72 Fed. Reg. 26544 (May 10, 2007).

he fails to properly attribute dioxins in the putative class area to Arkema, fails to properly account for alternative sources of dioxins, fails to reliably opine about the resuspension of dioxins, and fails to properly opine on non-dioxin constituents. Nevertheless, the Court finds Dr. Kaltofen's opinions sufficiently relevant and reliable under *Daubert*.

1. Whether Dr. Kaltofen's Opinions Attributing Dioxins to Arkema Are Unscientific

Arkema's most vigorous critique is that Dr. Kaltofen, "without any scientific basis, equates the mere detection of dioxins in the proposed Class Area to a causal link with the Arkema events—a purported linkage that is critical to Plaintiffs' class certification efforts." ECF No. 266 at 9. Dioxins are sufficiently prevalent in the environment that samples taken from the class area might naturally contain them even if the Arkema Incident had never happened. *See* ECF No. 287-5 at 137:2-6 ("Q. . . . [R]egardless of how [the class area is] defined, you would expect the area surrounding the Arkema facility to have some detections of dioxins and furans even if the Arkema events never occurred? A. That's correct."). To opine that the Arkema Incident exposed class members to dioxins, then, Dr. Kaltofen must be able to reliably distinguish between emissions from the Incident and background levels of dioxins.

Arkema contends that the Court should exclude Dr. Kaltofen's opinion on the causal link between the Arkema Incident and dioxins for two reasons. First, Arkema argues that Dr. Kaltofen has no objective data that points to the source of dioxins in the class area. Second, Arkema argues that Dr. Kaltofen failed to rule out alternative sources that could have produced the dioxins. The Court determines that these issues go more to the weight of Dr. Kaltofen's opinions than to their reliability.

i. Inferring causation between the Arkema Incident and dioxin levels

Dr. Kaltofen uses several techniques to causally link dioxins in the class area to the Arkema Incident. The Court's prior order recognized that Dr. Kaltofen

> compared the chemicals found off-site to the list of chemicals known to have been present at the Arkema facility before the explosions. [ECF No. 125-6 at 4-5, 8.] He then linked each of the chemicals of concern to either those chemicals reported to be at the facility or to byproducts of the explosion of those chemicals. [ECF No. 125-6 at 8, 13-15, 18.] He also conducted an instrumental analysis of certain samples from the Arkema facility and off-site and found very similar elemental profiles. [ECF No. 125-6 at 11.] He compared physically the large chunks of ash that were found on the sampled properties. [ECF No. 125-6 at 11.] He also compared the chemicals found in the samples to the models created by Defendant's expert, Trinity Consultants, which show the likely paths of contaminants released by the wastewater overflow and explosions. [ECF No. 125-6 at 4.]

ECF No. 169 at 12. For these reasons, the Court originally determined that "[w]hile it certainly would have been better for Dr. Kaltofen additionally to include the background levels, it was not necessary under Daubert at the class certification stage." *Id.*

Post-*Prantil*, Dr. Kaltofen considered background levels of dioxins from published studies. The EPA has recognized that "[i]n some cases, published background levels may exist that can be applied to a specific site." U.S. E.P.A. OFFICE OF EMERGENCY AND REMEDIAL RESPONSE, ESTABLISHING BACKGROUND LEVELS (1995) (stating that published data sources like nearby investigations, local surveys, university studies, and tables or databases with concentration ranges from local or regional soils may be consulted when analyzing Superfund sites). Here, Dr. Kaltofen reviewed: (1) a study on San Jacinto that found a (World Health Organization ("WHO")) TEQ of 1.849 parts per trillion (PPT or ng/kg toxic equivalency using WHO 2006 toxic equivalent factors); (2) a Texas Commission on Environmental Quality ("TCEQ") 1997 rural soil survey that found a (WHO) TEQ of 0.8 to 22.6 ng/kg (and a mean of 7.1 ng/kg); (3) a TCEQ 1997 urban soil survey that found a (WHO) TEQ of 6.2 to 7.2 ng/kg (and a mean of 6.7 ng/kg); and (4) a 2014 study that

found that "[b]ackground [d]ioxin concentrations in soils range from 0.1 to 186 [PPT] for urban soils versus 0.1 to 22.9 PPT for rural soils." ECF No. 231-3 at 7–8. Dr. Kaltofen compared samples from the class area—which had readings of "not detected" to 977—to the mean values from the four external studies. *Id.* at 8. Due in part to the fact that several of Plaintiffs' samples had dioxin levels that exceeded the means from the external studies, Dr. Kaltofen opined that "[p]eople are exposed to higher dioxin concentrations within the class than they would be if they were exposed to background concentrations of dioxins." *Id.* Dr. Kaltofen also compared the levels of octachlorodibenzodioxin ("OCDD") in Plaintiffs' samples to background levels specified by the Agency for Toxic Substances and Disease Registry ("ATDSR"). That comparison revealed that several of Plaintiffs' samples featured OCDD levels orders of magnitude above the maximum levels set out by the ATSDR. ECF No. 254-3 at 5–6.

Dr. Kaltofen's extrapolation from published background levels appears sufficiently reliable to pass muster under *Daubert*. In addition, Dr. Kaltofen did more than simply compare Plaintiffs' samples to background readings. He also analyzed the composition of the samples in light of chemicals that were present at the Crosby facility, considered the distance of the samples to the facility, and studied chunks of physical material on nearby properties. Furthermore, Dr. Kaltofen noted the existence of volatile contaminants in several of Plaintiffs' samples, which suggests that the properties in question were within reach of the discharge from the Arkema fires. ECF No. 82-3 at 7–9. And while Arkema disputes that Plaintiffs' samples support Dr. Kaltofen's conclusion—only one sample checks in above the maximum value from the 2014 study, ECF No. 266 at 20, just eight samples were above the rural range from the 1997 TCEQ study, *id.* at 21, and the mean

of Plaintiffs' samples is lower than the means from the external studies, ECF No. 266-2 (Exhibit A) at 143:10-16—that critique speaks more to accuracy than reliability.[17]

The party offering the expert need prove only " 'by a preponderance of the evidence that the testimony is reliable,' not that it is correct." *Swanston*, 2021 WL 327588, at *2 (quoting *Moore*, 151 F.3d at 276). The Court finds that Dr. Kaltofen's efforts to infer causation between the Arkema Incident and dioxins in the class area meet the *Daubert* moment. Lost in Arkema's statistical critique is the physical evidence that Arkema belched smoke and ash and black "goo" onto properties in the class area. Dr. Kaltofen's analytical findings must be viewed through the prism of the fires at the Crosby facility. Dr. Kaltofen found what he expected to find. And he verified that finding with reliable analysis. The Court therefore rejects Arkema's first argument for exclusion.

ii. Ruling out alternative sources

Next, Arkema contends that Dr. Kaltofen cannot reliably link the Arkema Incident to dioxins in Plaintiffs' samples because he failed to account for alternative sources. *See Advisory Committee Notes to 2000 Amendment* of FED. R. EVID. 702 (noting that courts should consider "[w]hether the expert has adequately accounted for obvious alternative explanations"); *see* ECF

[17] Arkema also asserts that Dr. Kaltofen should have conducted a percentage sourcing analysis, chemical fingerprinting analysis, or spatial analysis, but that argument is grist for the trier of fact. Indeed, while Dr. Kaltofen may not have conducted a standard spatial analysis, ECF No. 266-2 (Exhibit A) at 166:23–167:2, he did "look[] at on-site samples which presumably have a much smaller distance, samples that are more or less what appears to be the class area less than seven miles, and then samples that are more distant than that versus a wider-ranging background." *Id.* at 166:18-22. Arkema's experts did not find a relationship between dioxin levels and distance from the Crosby facility, but those experts only considered samples that exceeded the *maximum* level of the background range from the external studies. ECF No. 266-2 (Exhibit L) at 5, 29. Dr. Kaltofen compared samples to mean values from those studies; the experts did not compare like-for-like.

No. 266-2 (Exhibit A) at 182:17-19 (noting the importance of "alternative or confounding sources when determining the source of a constituent"). The Court disagrees with Arkema.

Dr. Kaltofen's post-*Prantil* report addresses alternative sources like "[o]il and gas operations, railroad traffic, roadway traffic, other accidents and fires, and other industrial emitters[.]" ECF No. 231-3 at 11. Dr. Kaltofen ruled out other industrial emitters because of the three nearby facilities with prior releases, "only KMCO has a release history for any chemical compounds on the PAH or Dioxins/furans category[,] [and] KMCO's release history includes only one PAH compound, namely naphthalene." *Id.* Dr. Kaltofen concluded that oil and gas operations were not confounding because "[m]any of the compounds in potential oil & gas-related releases follow different environmental transport pathways, such as site-specific releases of hydrocarbons to the surrounding soils rather than air releases of contaminated soot, ash, vapors and particulate matter as was associated with the Arkema releases." *Id.* at 13. Dr. Kaltofen reasoned that since those operations "[l]ack[] the energy of the Arkema explosions and fires," they have no "mechanism for spreading communitywide." *Id.* As for the myriad other potential sources of dioxins (like trash burning), Dr. Kaltofen opined that they "are part of the background experienced similarly by the proposed class members, and that Arkema's release was the primary source of increases in pollutant concentrations above background in the proposed class area[.]" *Id.*

Dr. Kaltofen's effort to rule out confounding sources sits on the razor's edge of reliability. Dr. Kaltofen's explanation for industrial emitters is solid; the lack of dioxin-based releases from those plants suggest that they did not contribute to the heightened sample readings. But his explanation for oil and gas operations is somewhat shaky. Individual oil and gas operations might not have spread dioxins communitywide, but such operations could have produced the sample readings in aggregate if they were spread around the class area. Dr. Kaltofen's explanation for

other confounding sources also appears somewhat circular. He opined that other sources did not increase levels above background because the background levels account for them. But he did not analyze the external studies to see what sources contributed to the background readings there, nor did he analyze the types of activities conducted in the class area in this case.

Nevertheless, after reviewing the reports, depositions, and hearing testimony, the Court permits Dr. Kaltofen's opinions. *See Chery v. C.R. Bard, Inc.*, 2017 WL 7726741, at *1 (S.D. Fla. Apr. 18, 2017) ("A review of the case law after *Daubert* shows that the rejection of expert testimony is the exception rather than the rule."). Arkema has fair criticisms of Dr. Kaltofen's efforts to rule out alternative sources, but those criticisms speak more to the accuracy of his conclusions than the reliability of his approach. Even if Dr. Kaltofen's opinions may be imperfect, he considered and dismissed potentially confounding sources in the class area for rational reasons. Indeed, Arkema's own expert (Dr. Allen Uhler) acknowledged that background levels account for natural and man-generated sources. ECF No. 287-8 at 14:11–15:4. Dr. Uhler recognized that background levels generally account for confounding sources like backyard trash burning and vehicle emissions. *Id.* at 37:11–38:14, 53:11–54:1. And Dr. Uhler added that "Texas dioxin levels are no different than dioxin levels anywhere else in the country." ECF No. 48:25–49:2. What's more, Arkema's focus on dioxins ignores the fact that Plaintiffs found other compounds at the sampled sites. *See* ECF No. 254-3 at 5–6. That finding increases the likelihood that the dioxins came from Arkema. And again, Dr. Kaltofen's opinions do not exist in a vacuum. Dr. Kaltofen is not working backward from unknown samples to show that the Arkema Incident occurred. Dr. Kaltofen is working forward from massive fires at the Crosby facility to show that the Incident released harmful contamination. *See e.g.*, ECF No. 264-6 at 63 (depicting a massive column of

smoke from two refrigeration trailers at the Crosby facility). The Court therefore finds that Dr. Kaltofen's efforts to rule out alternative sources are sufficiently reliable under *Daubert*.

2. Whether Dr. Kaltofen's Opinions on Resuspension are Reliable

Arkema also disputes the reliability of Dr. Kaltofen's opinions on resuspension. Specifically, Arkema takes issue with Dr. Kaltofen's assertions that "[c]ontamination in the area comes both from the original releases and from the redistribution of environmental materials[,] . . . [so people] in the class area also experience exposure from multiple locations as they move about in the area. Likewise, individual locations can become contaminated or re-contaminated by wind, stormwater runoff, and other environmental transformations." ECF No. 254-3 at 3. Arkema further disagrees with Dr. Kaltofen's conclusion that since "human activity [tends] to track outdoor contaminants into homes[,] . . . [and] [h]omes can trap, hold and concentrate airborne contaminants via roof vents and other mechanisms . . . [o]ver time indoor air concentrations of persistent contaminants from the Arkema releases would be expected to exceed outdoor concentrations." ECF No. 231-3 at 3.

Arkema asserts that Dr. Kaltofen's opinions on resuspension are unreliable because when asked in his deposition to "identify specific facts or data regarding members in the class area or the properties within the class that would demonstrate that this principle of resuspension or recontamination . . . actually happened here," he responded: "I don't have any reason to believe that the normal scientific principles will fail to apply in the class. But, no, I haven't tried to reconstitute the kind of data that EPA put together to show that resuspension and human movement that causes exposure at multiple locations is somehow not happening at Crosby." ECF No. 266-2 (Exhibit A) at 316:11–317:1. Arkema submits that these comments are consistent with the fact that

no specific data supports resuspension in this case. Arkema also argues that Dr. Kaltofen's failure to conduct a resuspension analysis is of particular concern because resuspension differs based on whether a contaminant is persistent or non-persistent, and only some of the contaminants released in the Incident were persistent.

Plaintiffs, for their part, contend that resuspension is a widely accepted scientific principle, and that attacking Dr. Kaltofen on this point is akin to attacking an expert for failing to prove that gravity exists. The Court will not equate resuspension with gravity, but it does find that resuspension is acknowledged in the scientific literature and by Plaintiffs' other experts. *See* ECF No. 231-3 at 15–17 (citing several studies for the proposition that outdoor soils can be resuspended and carry contaminants to different areas, including the home). What's more, Dr. Kaltofen testified about the relationship between persistence and resuspension, stating that he ignored volatile organic compounds that evaporate quickly and are not likely to persist in favor of more persistent contaminants like dioxins and furans. ECF No. 287-6 at 54:2–55:7; *see* ECF No. 231-3 at 15 ("This persistence in the dioxin/furan group of chemical contaminants increases their lifetime in the environment, and as a result provides a greater opportunity for soil-bound dioxins and furans to resuspend, remobilize, and redistribute within the proposed Class Area."). As with Mr. Glass, then, the Court finds that the concept of resuspension is well-founded in the scientific literature. Dr. Kaltofen's opinion is also rooted in his understanding of the persistence of dioxins and dioxin-like compounds. Accordingly, the Court holds that Dr. Kaltofen's opinion on this issue is sufficiently reliable to be admitted.

3. Whether Dr. Kaltofen's Opinions on Non-Dioxin Constituents Are Relevant

Finally, Arkema argues that the Court should exclude Dr. Kaltofen's opinions on constituents other than dioxins and dioxin-like compounds. In particular, Arkema contends that Dr. Kaltofen's opinions on semivolatile organic compounds ("SVOCs")—such as polycyclic aromatic hydrocarbons ("PAHs")—and inorganic compounds—such as cyanide—are irrelevant because Plaintiffs' experts on risk assessment and remediation based their opinions solely on dioxins and dioxin-like compounds. *See* ECF No. 266-2 (Exhibit D) at 40:10-24, 45:1-22 (stating that dioxins are the only Constituent of Potential Concern ("COPC"), and that the other constituent subcategories like SVOCs and inorganic compounds require no further sampling or testing). Furthermore, Arkema takes issue with the fact that Dr. Kaltofen does not offer opinions regarding synergistic effects between dioxins and any other compounds. ECF No. 287-6 at 67:7-14. Arkema therefore contends that Dr. Kaltofen's opinions on non-dioxin contaminants are irrelevant. Plaintiffs, for their part, say that Dr. Kaltofen's opinions on other constituents are relevant for two reasons: (1) to demonstrate potential synergistic health effects between contaminants; and (2) to define the area of impact of the releases from the Arkema Incident.

Plaintiffs have the better argument. First, non-dioxin compounds form the basis for Plaintiffs' toxicological conclusions regarding synergistic health effects. Dr. Troast (Plaintiffs' toxicology expert) opines that "the additive and synergistic effects of chemicals can greatly exceed the potential health hazard of a single constituent alone." ECF No. 287 at 18. Facing a similar argument from Arkema the last go-round on Tentatively Identified Compounds ("TICs"), the Court permitted Dr. Kaltofen's opinion on TICs because "unknown hazards result from combining effects of chemicals, and that these unidentified chemicals increase the risk of a more severe cumulative effect." ECF No. 169 at 15. The same is true for Dr. Kaltofen's opinion on SVOCs and

inorganic compounds. The fact that Dr. Kaltofen himself does not specify the synergistic health effects is immaterial. On the second issue, the spread of non-dioxin compounds is useful for evaluating the size of the class area and the reach of the contaminants. While dioxins may not have traveled everywhere that PAHs traveled, the dispersion of PAHs makes it more likely that dioxins were deposited in a similar fashion. Dr. Kaltofen's opinion therefore helps explain a fact in issue: how broadly the Arkema Incident spread dioxins around the class area. *See Bocanegra v. Vicmar Servs., Inc.*, 320 F.3d 581, 584 (5th Cir. 2003) ("The expert testimony must be relevant, not simply in the sense that all testimony must be relevant, . . . but also in the sense that the expert's proposed opinion would assist the trier of fact to understand or determine a fact in issue."). Consequently, the Court finds that Dr. Kaltofen's opinions on non-dioxin contaminants are reliable and relevant under *Daubert*.

4. Summary

Some of Dr. Kaltofen's opinions sit on the precipice of reliability. Nevertheless, the Court ultimately finds that Plaintiffs have demonstrated that his opinions are sufficiently relevant and reliable under *Daubert*. The Court therefore **DENIES** Arkema's Motion to Exclude the Opinions of Dr. Kaltofen.

G. Arkema's Motion to Exclude Drs. Richard Troast and Charles Werntz

Finally, Arkema lodges joint objections against the opinions offered by Drs. Troast and Werntz. Because these two experts did not file a joint report, the Court first describes how their opinions fit together before jumping into the *Daubert* issues.

1. The Opinions at Issue

Plaintiffs offer Dr. Troast (a toxicologist) to "link the chemicals found on Plaintiffs' properties with negative health outcomes." ECF No. 169 at 16. Plaintiffs cite Dr. Troast for the proposition that "even if the compounds did not reach a toxic level alone, there would be additive or synergistic effects from combined exposures." ECF No. 264-1 at 7. Plaintiffs use Dr. Troast's reports to contend that "exposure to the identified chemicals of concern individually include cancer and many other potential impacts, including damage to the central nervous system, renal and immunological systems, as well as hepatic and respiratory systems." ECF No. 290 at 17. Plaintiffs therefore conclude that class members "face a common risk of continuing potential for health risks due to their exposure to Arkema's toxicants." *Id.* at 18. Plaintiffs also rely on Dr. Troast to support the idea that "there is no requirement of direct causation linkage with medical surveillance like there is with medical monitoring," such that surveillance is appropriate "[w]hen a community has been exposed but the negative impacts are not yet identified." *Id.* at 20.

Plaintiffs offer Dr. Werntz (a doctor of osteopathic medicine) to provide the details of their proposed medical surveillance program. Dr. Werntz recommends that medical surveillance take the following form: engage an experienced epidemiologist to design a survey, collect data via that survey, analyze whether condition rates exceed background levels, provide information to the community, conduct pulmonary and blood serum testing, and develop an educational program to inform the community about contaminant risks. ECF No. 264-1 at 13–14. Plaintiffs also use Dr. Werntz to particularize the health problems that should be subject to medical surveillance, including pulmonary issues, cancers (including those accepted as related to Agent Orange), and health conditions such as "AL amyloidosis, chloracne, Type 2 diabetes, hypothyroidism, ischemic

heart disease, Parkinson's disease, early onset peripheral neuropathy, among others[.]" *Id.* (quoting ECF No. 264-7 at 5).

2. Whether the Opinions Are Relevant to Plaintiffs' Medical Surveillance Claim

Arkema first contends that the reports from Drs. Troast and Werntz are irrelevant because the experts "admit they do not know whether anyone in the putative class is or may be at an imminent and substantial risk of endangerment." ECF No. 267 at 7. The Court finds that this argument goes more to the merits of Plaintiffs' case than to the issue of relevance under *Daubert*.

Arkema bases its argument on the requirements of the Resource Conservation and Recovery Act ("RCRA"). "RCRA is a comprehensive environmental statute that governs the treatment, storage, and disposal of solid and hazardous waste." *Meghrig v. KFC Western, Inc.*, 516 U.S. 479, 483 (1996). The primary purpose of the statute "is to reduce the generation of hazardous waste and to ensure the proper treatment, storage, and disposal of that waste which is nonetheless generated, 'so as to minimize the present and future threat to human health and the environment.' " *Id.* (quoting 42 U.S.C. § 6902(b)). Plaintiffs rely on RCRA in part to support their requests for injunctive relief. Under RCRA's citizen suit provision, a person may bring a civil action "against any person . . . who has contributed or who is contributing to the past or present handling, storage, treatment, transportation, or disposal of any solid or hazardous waste which may present an imminent and substantial endangerment to health or the environment[.]" 42 U.S.C. § 6972(a)(1)(B). A qualifying endangerment is one that creates "a threat which is present now, although the impact of the threat may not be felt until later." *Meghrig*, 516 U.S. at 486 (quoting *Price v. U.S. Navy*, 39 F.3d 1011, 1019 (9th Cir. 1994)). "The operative word in the statute is the word 'may.' " *Parker v. Scrap Metal Processors, Inc.*, 386 F.3d 993, 1015 (11th Cir. 2004). This

is " 'expansive language' that confers 'upon the courts the authority to grant affirmative equitable relief to the extent necessary to eliminate *any risk* posed by toxic wastes.' " *Id.* (quoting *United States v. Price*, 688 F.2d 204, 213–14 (3d Cir. 1982)) (emphasis in original). Still, "there is a limit to how far the tentativeness of the word *may* can carry a plaintiff." *Crandall v. City & Cty. of Denver, Co.*, 594 F.3d 1231, 1238 (10th Cir. 2010) (emphasis in original).

Extrapolating from RCRA, Arkema contends that Drs. Troast and Werntz "have no evidence that there may be a risk to the putative class that could fairly be characterized as imminent and substantial." ECF No. 267 at 8. Arkema notes that Drs. Troast and Werntz do not know the long-term health effects of the contaminants released in the Arkema Incident, ECF No. 267-2 (Exhibit B) at 46:12-19, do not know whether class members were exposed to contaminants above a no-observable-adverse-effect level, *id.* at 27:6-22, have not seen any risk-based calculations that quantify the actual risk to class members, *id.* at 237:4-18, and have neither conducted nor seen an exposure pathway analysis, ECF No. 267-2 (Exhibit A) at 249:4-13. Arkema says that "relevance under the RCRA requires that there 'be some basis on which to assess the magnitude of the possible risk,' *Schmucker v. Johnson Controls, Inc.*, 477 F. Supp. 3d 791, 808 (N.D. Ind. 2020), *aff'd sub nom.*, 9 F.4th 560 (7th Cir. 2021) (internals omitted)[.]" ECF No. 293 at 5.[18] Arkema therefore submits that the opinions from these experts "fail 'to provide a 'relevant' link with the facts at issue' " and must be excluded. ECF No. 267 at 12 (quoting *Knight v. Kirby Inland Marine, Inc.*, 482 F.3d 347, 355 (5th Cir. 2007)).

Expert testimony is relevant so long as it "would assist the trier of fact to understand or determine a fact in issue." *Bocanegra*, 320 F.3d at 584. And here, the opinions of Drs. Troast and

[18] Arkema's quote here is from an opinion following a bench trial; it says nothing about the relevance of expert testimony.

Werntz are relevant according to that standard. Dr. Troast wrote that "[t]he finding of TCDD deposited in the soils described by Dr. Kaltofen and the report of Shannon Thompson that quantified the other exposures to TCDD demonstrate that the carcinogenic material was released and is available for the population to encounter." ECF No. 267-2 (Exhibit C) at 6. He acknowledged that "[w]hile the actual mechanisms of toxicity for TCDD and HxCDD remain undefined both ATSDR and EPA have suggested that pleiotropic effects from exposure to [both] of these chemicals are likely." *Id.* He recognized that many studies have shown "the likelihood of Dioxins and Dioxin-like compounds producing cancer in test animals and humans," and he specifically noted that "[t]here is adequate data in the scientific reports of the USEPA cited in the EPA Integrated Risk Information System (IRIS) reporting system demonstrating the relationship of exposure to TCDD and cancers." *Id.* at 8. He cited Dr. Werntz's report for the proposition that individuals who were acutely exposed during the release event have experienced significant ongoing pulmonary symptoms and are at risk of long-term respiratory problems. *Id.* And he confirmed that there is "enough sampling data to recommend medical surveillance." ECF No. 284-4 at 33:2-6. Based on these constituent parts, the Court concludes that Dr. Troast's opinions on the toxicological dangers posed by the Arkema Incident and the need for medical surveillance will help determine whether the contamination here "may present an imminent and substantial endangerment to health or the environment."

The same holds true for Dr. Werntz's opinions. Dr. Werntz wrote that the Arkema Incident presents a "novel exposure scenario and potential for health effects that are not currently understood." ECF No. 231-7 at 3. Dr. Werntz recognized that many of the chemicals released in this report implicate long-term health risks and highlighted the presence of dioxins and dioxin-like compounds in soil and household dust samples. *Id.* at 4. He opined that his proposed surveillance

program would benefit class members by providing population health data, identifying individual abnormalities, and educating people on how to reduce further exposure to contaminants. *Id.* In addition, he restricted the scope of his program based on the contaminants at issue, writing that the program must specifically address pulmonary incidents, certain cancers, and select additional health conditions (including those related to Agent Orange). *Id.* at 5. Thus, Dr. Werntz also based his opinions on considerations relevant to relief under RCRA.

Arkema puts the cart before the horse in attempting to address Plaintiffs' RCRA claim under *Daubert*. On Arkema's Motion to Exclude, the Court need not address whether Plaintiffs' proof falls "short of RCRA's requirement that a 'health endangerment' must exist that is both 'imminent' and 'substantial' before any injunctive relief is awarded." ECF No. 267 at 12 (quoting 42 U.S.C. § 6972(a)(1)(B)). The only question is whether the opinions of Drs. Troast and Werntz are sufficiently relevant and reliable. The Court answers that question in the affirmative.

3. Whether the Opinions of Drs. Troast and Werntz Rest on a Reliable Methodology

Arkema also contends that the opinions of Drs. Troast and Werntz "should be excluded because [the experts] selected an inapplicable methodology, then failed to apply it, and provided opinions that are pure *ipse dixit*." ECF No. 267 at 12. Arkema raises three critiques here: (1) the experts improperly relied on a 1995 publication from the ATSDR; (2) the experts failed to properly apply ATSDR guidance; and (3) the experts were motivated by *ipse dixit* moral authority. The Court disagrees on all three counts.

i. The 1995 ATSDR publication

Arkema's first critique is that Drs. Troast and Werntz improperly extrapolated from a single sentence in a 1995 ATSDR publication. The section at issue reads:

> In any case in which an association has not been established between an exposure and a specific adverse health outcome, several research and health education activities may be considered. Those activities could include health outcome studies, an exposure assessment at the site, epidemiologic studies, or professional education. . . . In cases in which there is no known association between the exposure and specific adverse health outcomes (which could include health outcomes, illnesses, or markers of effect), medical monitoring is not an appropriate public health activity. **In cases in which there is limited information on a specific health effect's relationship to an exposure, then options such as epidemiologic surveillance, a disease and symptom prevalence study, or an epidemiologic study are more appropriate.** When adequate information exists that links exposure to a chemical with a specific adverse health effect, further consideration will be given to the appropriateness of medical monitoring in that population.

ECF No. 284-10 at 1 (emphasis added). Arkema is correct that Drs. Troast and Werntz relied on this authority for the proposition that medical surveillance is warranted. *See e.g.*, ECF No. 284-4 at 52:2–53:12 ("Q. . . . [W]here is the document that I would follow to . . . look up how you went through your thought process to say we ought to do medical surveillance here? . . . A. . . . Let's go back to page 38840 in the Federal Register notice), ECF No. 284-6 at 34:3-13 ("Q. I want to know what document you're relying on that tells us that triggers the need for medical surveillance. A. Certainly. So I'm using . . . the Federal Register, Volume 60, No. 145, on Page [38840]. Q. That's the 1995 ASTDR? A. Yes, it is."). Nevertheless, Drs. Troast and Werntz did not rest their opinions solely on this document. Dr. Troast also drew on his experience dealing with toxic releases in other communities. *See* ECF No. 284-4 at 75:4-9 (" . . . going to go back to Libby where we did surveillance and monitoring."). He referred to a 2018 document that updated the ATSDR's approach to environmental contamination. *Id.* at 136:6–138:25; *see* ECF No. 267-2 (Exhibit C) at 2–3 (addressing the 2018 ATSDR process report). And both experts extrapolated from the samples collected in this case. ECF No. 267-2 (Exhibit C) at 3–5. Consequently, Drs. Troast and Werntz did not base their opinions on a single sentence from a 1995 document. In addition, while the 1995 ATSDR publication was designed to advise agencies how to proceed under CERCLA—not to

advise private plaintiffs how to proceed under RCRA—it is not inherently unreliable to use it to support an opinion on medical surveillance. The document addresses the circumstances in which medical surveillance might benefit a community. That is a logical jumping-off point from which to offer an opinion on the need for medical surveillance. As a result, the Court finds that Arkema overstates the experts' reliance on the 1995 ATSDR publication. This argument is no basis for exclusion.

ii. Following ATSDR guidance

Next, Arkema contends that the opinions of Drs. Troast and Werntz should be excluded because the experts failed to properly apply ATSDR guidance. In 2005, the ATSDR emphasized the importance of exposure classification and comparison "to determine where site-specific doses lie in relation to the observed effects levels reported in the studies of interest and whether differences between study data and the exposure scenario being evaluated make health effects more or less likely." ECF No. 267-2 (Exhibit F) at 8-6. Arkema complains that Drs. Troast and Werntz failed to compare actual doses (rather than exposure) to observed-effects levels in a manner that would allow them to conclude that the Arkema Incident endangered human health. *See e.g.*, ECF No 284-4 at 217:8-13 ("Q. At the levels that were found in the samples, can you point me to a single toxicological study where the concentration found in the samples was above a no adver[se] effect level? A. No I can't.").[19]

[19] Relying on exposure alone to suggest that health risks will follow is a risky game. In *Bombardiere*, for example, the district court excluded Dr. Werntz's opinion on medical monitoring because the plaintiff could not point to evidence indicating "that he was exposed to silica dust and other fracking materials at levels and at durations known in the medical literature to be associated with" certain health conditions. *Bombardiere v. Schlumberger Tech. Corp.*, 934 F. Supp. 2d 843, 852 (N.D.W.Va. 2013).

The problem with Arkema's argument here is that it suffers from a myopic focus on dioxins. Some of the uncertainty in this case comes from the potential for synergistic effects between dioxins and other contaminants. There are no studies in the literature that describe how the contamination from the Arkema Incident affects human health; no entity has polluted the environment in the same way that Arkema did. Still, Dr. Troast opined that, "[b]ased on available reports, it is more likely than not that the similar compounds do interact and stress a biologic system in at least a measure similar to the total dose of a single compound[,] [so] I would expect to see synergistic effects between Dioxin and Dioxin-like compounds demonstrated." ECF No. 267-2 (Exhibit C) at 11; *see* ECF No. 267-2 (Exhibit A) at 167:13-25 (describing the potential for synergistic effects when contaminants attack a target organ in the same manner). Even without concrete comparisons between doses and no-adverse-effect levels, Drs. Troast and Werntz identified problematic contaminants in the Arkema Incident, found evidence of elevated levels of contaminants in samples that exceeded RSLs, recognized acute symptoms from people exposed immediately after the explosions, and extrapolated synergistic effects from the fact that several contaminants in this case target the same organ systems. Plaintiffs need prove only " 'by a preponderance of the evidence that the testimony is reliable,' not that it is correct." *Swanston*, 2021 WL 327588, at *2 (quoting *Moore*, 151 F.3d at 276). Here, the Court finds that the opinions from Drs. Troast and Werntz are relevant and reliable even without any dose-specific analysis.

iii. *Ipse dixit* moral authority

Third, Arkema submits that Drs. Troast and Werntz improperly based their recommendations on "subjective, moral conviction." ECF No. 267 at 20. Arkema pulls quotes

from the depositions of both experts to support this point. For Dr. Troast, Arkema directs the Court to the following exchange:

> Q. Dr. Troast, let me ask you this: Why should Arkema pay for the surveillance and site characterization if we do not have data to support cleanup or diagnostic monitoring?
> A. I don't think there's any question that their release of the chemicals have caused the concerns of the population. And if you can't show that they should do it through a legal mechanism, **a good saint and a Good Samaritan would be to go out and do some more sampling to say hey, you don't have a problem**.

ECF No. 284-4 at 277:18–278:3 (emphasis added). Arkema suggests that the bolded statement "demonstrates that [Dr. Troast's opinion is] not based on an accepted protocol . . . in light of the evidence of actual exposure to hazardous chemicals, or an expert risk assessment . . . [but] is an *ipse dixit* belief based on [his] subjective belief[] of what is "saintly[.]" ECF No. 267 at 20. But Arkema ignores the context of this exchange. In his deposition, Dr. Troast explained why he thought medical surveillance was appropriate in this case. He testified about the sampling in this case, the 1995 ATSDR, his experience in Libby, and the reports of Plaintiffs' other experts, among other reasons. Dr. Troast's opinion therefore does not rest on *ipse dixit* moral authority.

Arkema repeats this attack against Dr. Werntz. Arkema pulls the bolded portion from the below exchange:

> Q. Okay. I'll allow that. Big event at an industrial site. Sentence from the 1995 ATSDR. Reports of acute reactions. Some long-term complaints from people who actually breathed the smoke. And a desire to reassure the community. Where do I go that somebody has said that's the kind – that's the very kind of thing that we ought to do medical surveillance for, that it's not only appropriate there, but you ought to be able to require someone to fund it?
> A. Other than all the things you've just mentioned, I don't know of an actual source that will say this is exactly what we're talking about, but I know that **from a perspective taking care of the population in the community, it's the right thing to do.**

ECF No. 284-6 at 103:02-23 (emphasis added). As with Dr. Troast, Arkema asserts that the bolded testimony indicates that Dr. Werntz's opinion is based on *ipse dixit* moral authority. But Arkema leaves out that Dr. Werntz included the caveat: "Other than all the things you've just mentioned." That phrase indicates that Dr. Werntz had other sources for his opinion beyond his belief that medical surveillance in this case is "the right thing to do." The Court therefore rejects Arkema's argument to exclude these expert opinions based on the comments pulled from their depositions. The experts relied on more than simple moral authority in this case.

4. Summary

For the foregoing reasons, the Court finds that the opinions of Drs. Troast and Werntz are sufficiently relevant and reliable to clear the *Daubert* hurdle. The Court therefore **DENIES** Arkema's Motion to Exclude the Opinions of Drs. Troast and Werntz.

IV. PLAINTIFFS' RENEWED MOTION FOR CLASS CERTIFICATION

With these *Daubert* rulings in hand, the Court can turn to Plaintiffs' Renewed Motion for Class Certification. Ultimately, the Court **DENIES** Plaintiffs' Motion to Certify a Rule 23(b)(3) class but **GRANTS** Plaintiffs' Motion to Certify a Rule 23(b)(2) class.

A. Legal Standard

A class action is "an exception to the usual rule that litigation is conducted by and on behalf of the individual named parties only." *Califano v. Yamasaki*, 442 U.S. 682, 700–701 (1979). To ensure that this exception is only deployed in appropriate cases, Rule 23 provides a series of requirements. For certification, Plaintiffs must satisfy the four threshold requirements of Rule 23(a), as well as the requirements of Rule 23(b)(1), (2), or (3). *Maldonado v. Ochsner Clinic*

Foundation, 493 F.3d 521, 523 (5th Cir. 2007). Rule 23(a) requires that Plaintiffs demonstrate numerosity, commonality, typicality, and adequacy of representation.[20] FED. R. CIV. P. 23(a). Here, Plaintiffs seek certification under Rule 23(b)(3) for damages and Rule 23(b)(2) for injunctive relief. Rule 23(b)(3) permits certification if "the court finds that the questions of law or fact common to class members predominate over any questions affecting only individual members, and that a class action is superior to other available methods for fairly and efficiently adjudicating the controversy." FED. R. CIV. P. 23(b)(3). Rule 23(b)(2) permits certification if "the party opposing the class has acted or refused to act on grounds that apply generally to the class, so that final injunctive relief or corresponding declaratory relief is appropriate respecting the class as a whole." FED. R. CIV. P. 23(b)(2). "The party seeking class certification bears the burden of establishing that Rule 23 is appropriate." *Maldonado*, 493 F.3d at 523.

B. The Scope of Review on Remand

The parties take different approaches to the scope of the Court's current review. Arkema's position is that every possible issue regarding certification can and should be litigated on remand. Plaintiffs argue that Arkema's stance "is an affront to the letter and spirit of the Fifth Circuit's opinion remanding these proceedings," and that the Court should address only those issues raised in *Prantil*. ECF No. 290 at 1. The proper approach lies somewhere in between.

Two key doctrines determine the issues that are presently available for adjudication: the law-of-the-case doctrine and the waiver doctrine. "The law-of-the-case doctrine 'posits that when a court decides upon a rule of law, that decision should continue to govern the same issue in

[20] Arkema does not (and cannot) contest that the Rule 23(a) requirements have been met here. In line with the Court's prior order, then, the Court finds that those requirements have been met. ECF No. 169 at 18–27.

subsequent stages in the same case.' " *United States v. Castillo*, 179 F.3d 321, 326 (5th Cir. 1999) (quoting *Arizona v. California*, 460 U.S. 605, 618 (1983)). Under this doctrine, issues decided in *Prantil* may not be reexamined by this Court. *United States v. Lee*, 358 F.3d 315, 320 (5th Cir. 2004). Still, "an issue that is not expressly or implicitly decided on appeal does not become part of the law of the case." *Med. Ctr. Pharmacy v. Holder*, 634 F.3d 830, 834 (5th Cir. 2011); *see Alpha/Omega Ins. Servs., Inc. v. Prudential Ins. Co. of Am.*, 272 F.3d 276, 279 (5th Cir. 2001) ("[U]nlike res judicata, the law of the case doctrine applies only to issues that were actually decided, rather than all questions in the case that might have been decided, but were not.")

The waiver doctrine, meanwhile, imposes additional limits on the issues that are available for adjudication. The waiver doctrine "holds that an issue that could have been but was not raised on appeal is forfeited and may not be revisited by the district court on remand." *Med. Ctr. Pharmacy*, 634 F.3d at 834; *see Lee*, 358 F.3d at 323 ("[I]ssues not arising out of [the] ruling [from the appeals court] and not raised in the appeals court, which could have been brought in the original appeal, are not proper for reconsideration by the district court below."). The waiver doctrine " 'serves judicial economy by forcing parties to raise issues whose resolution might spare the court and parties later rounds of remands and appeals.' " *Med. Ctr. Pharmacy*, 634 F.3d at 834 (quoting *Castillo*, 179 F.3d at 325). The waiver doctrine " 'differs from the law-of-the-case doctrine in that it arises as a consequence of a party's inaction, not as a consequence of a decision on [the] part [of the Court of Appeals]." *Id.* (quoting *Castillo*, 179 F.3d at 325).[21]

[21] The parties do not address these doctrines. Arkema says little about the narrower scope of issues on remand. And while Plaintiffs complain about the breadth of Arkema's arguments, they rely on the doctrine of judicial estoppel. Judicial estoppel "prevents a party from asserting a position in a legal proceeding that is contrary to a position previously taken in the same or some earlier proceeding." *Ergo Science, Inc. v. Martin*, 73 F.3d 595, 600 (5th Cir. 1996). Unlike the law-of-the-case and waiver doctrines, judicial estoppel is primarily concerned with conflicts between a

Plaintiffs contend that Arkema improperly seeks to reopen three issues on remand: (1) superiority; (2) the scope and boundary of the class (ascertainability); (3) and standing. In *Prantil*, the Fifth Circuit stated: "Arkema does not dispute that the proposed class meets Rule 23(a)'s threshold requirements or that a class action is the superior litigation vehicle." 986 F.3d at 576. Under the waiver doctrine, then, Arkema is barred from raising issues related to Rule 23(a) and superiority at this time.

Arkema did not waive its argument on standing, however. On appeal, Arkema challenged the Court's finding that Plaintiffs had standing to seek injunctive relief. *See* Brief for Appellant at 46, *Prantil v. Arkema Inc.*, 986 F.3d 570 (5th Cir. 2021) (No. 19-20723) ("In addition to improperly assuming classwide exposure and equating exposure with injury, the court erred in basing standing on past injury because standing to seek injunctive relief requires a real or imminent threat of future harm - not past harm."). What's more, arguments concerning Article III standing cannot be waived. *See Doe v. Tangipahoa Par. Sch. Bd.*, 494 F.3d 494, 501 (5th Cir. 2007) (Barksdale, J., dissenting) ("[I]t is quite fundamental that parties cannot concede, or waive, standing as an issue of law."); *see also June Med. Servs. L. L. C. v. Russo*, 140 S. Ct. 2103, 2117 (2020) (differentiating between arguments on prudential standing, which can be forfeited or waived, and arguments on the "case-or-controversy requirement").

Still, the law-of-the-case doctrine also "applies to those issues decided by 'necessary implication.' " *Alpha/Omega*, 272 F.3d at 279 (quoting *In re Felt*, 255 F.3d 220, 225 (5th Cir. 2001)). "[E]ven when issues have not been expressly addressed in a prior decision, if those matters were 'fully briefed to the appellate court and . . . necessary predicates to the [court's] ability to

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party's arguments. Here, Plaintiffs' position is better addressed through the law-of-the-case and waiver doctrines.

address the issue or issues specifically discussed, [they] are deemed to have been decided tacitly or implicitly, and their disposition is law of the case.' " *Id.* (quoting *In re Felt*, 255 F.3d at 225). And standing is the quintessential example of a necessary predicate to a court's ability to address other issues. "The Constitution gives federal courts the power to adjudicate only genuine 'Cases' and 'Controversies[,]' . . . [which] includes the requirement that litigants have standing." *California v. Texas*, 141 S. Ct. 2104, 2113 (2021) (internal citations omitted). If a litigant has no standing, a court can "proceed no further." *Id.*; *see Schlesinger v. Reservists Comm. to Stop the War*, 418 U.S. 208, 215 (1974) (noting that "the absence of standing . . . suffices to prevent the power of the federal judiciary from being invoked by the complaining party"). To that end, the Fifth Circuit has stated that while Rule 23(f) "allows a party to appeal only the issue of class certification, '[s]tanding is an inherent prerequisite to the class certification inquiry.' " *Rivera v. Wyeth-Ayerst Laboratories*, 283 F.3d 315, 319 (5th Cir. 2002) (quoting *Bertulli v. Indep. Ass'n of Cont'l Pilots*, 242 F.3d 290, 294 (5th Cir. 2001)). Consequently, "standing may—indeed must—be addressed even under the limits of a rule 23(f) appeal." *Id.*

In *Prantil*, the Fifth Circuit paid no heed to Arkema's argument on standing. As a result, because standing "must" be addressed on a Rule 23(f) appeal, the Fifth Circuit "must" have implicitly decided that Plaintiffs had standing. That decision is now the law of the case. Nevertheless, for the avoidance of all doubt, the Court will also address Arkema's standing arguments in the section on injunctive relief below.

C. Plaintiffs' Motion to Certify a Rule 23(b)(3) Damages Class

Plaintiffs seek to certify a damages class under Rule 23(b)(3) "for diminution of value determined by common formula and supported by expert evidence." ECF No. 264-1 at 23. Because

Arkema waived its arguments on Rule 23(a) and superiority, the key issue here is whether Plaintiffs can demonstrate "that the questions of law or fact common to class members predominate over any questions affecting only individual members, and that a class action is superior to other available methods for fairly and efficiently adjudicating the controversy." FED. R. CIV. P. 23(b)(3). "The predominance requirement 'tests whether proposed classes are sufficiently cohesive to warrant adjudication by representation.' " *Prantil*, 986 F.3d at 576 (quoting *Torres v. S.G.E. Mgmt., L.L.C.*, 838 F.3d 629, 636 (5th Cir. 2016) (en banc) (quoting *Amchem Prods., Inc. v. Windsor*, 521 U.S. 591, 623 (1997))). The Court must "consider predominance on a claim-by-claim basis[.]" *Id.* at 577.

Plaintiffs seek to certify a class under Rule 23(b)(3) for claims of negligence, trespass, and public nuisance. *See* ECF No. 304 at 80:7-10 ("THE COURT: Do you -- am I correct that you're asking for a (b)(2) class on CERCLA and RCRA and the (b)(3) class on Texas common law remedies? MR. BUNCH: Yes, your Honor."). For the reasons set out below, the Court finds that Plaintiffs have failed to clear the predominance hurdle on these common law claims.

1. Negligence

The elements of a negligence action are (1) duty, (2) breach, (3) causation, and (4) damages. *Allen v. Walmart Stores, L.L.C.*, 907 F.3d 170, 178 (5th Cir. 2018) (quoting *Greater Houston Transp. Co. v. Phillips*, 801 S.W.2d 523, 525 (Tex. 1990)). The Court finds that duty and breach present common questions, but causation and damages require individualized inquiries that ultimately predominate.

i. Duty and breach

Plaintiffs can present common evidence to show that Arkema owed a duty to all class members to undertake certain precautions, and that Arkema breached that duty by failing to take those precautions. ECF No. 264-1 at 25. Plaintiffs can use common evidence to demonstrate that Arkema should have prevented the Incident through proper emergency planning that accounted for the location of the Crosby facility and the dangerous nature of organic peroxide production. *Id.* Plaintiffs can use common evidence to prove that Arkema knew that its power supplies for the low temperature warehouses were insufficiently elevated, such that even flooding at the 100-year level would pose a serious risk. *Id.* at 24. Plaintiffs can use common evidence show that the property had been flooded in the past, that Arkema failed to properly plan for a storm like Hurricane Harvey, and that Arkema breached industry standards by failing to recognize that flooding could cause a loss of power that might trigger fires and explosions. *Id.* at 25. Plaintiffs can also counter Arkema's "Act of God" affirmative defense with common evidence that the flooding was predictable, foreseeable, and reasonably avoidable. Furthermore, Plaintiffs can use common evidence to piece together Arkema's actions as the floodwaters began to rise. *Id.* at 24. This common evidence is not insubstantial. It would take hours of trial time for Plaintiffs to adduce the necessary proof to demonstrate that Arkema's approach to Hurricane Harvey violated the relevant standards of care. Duty and breach, then, appear susceptible to common forms of proof.

ii. Causation

Causation, meanwhile, requires a great deal of individualized proof. Plaintiffs contend that they will demonstrate causation with common evidence because they "will prove through expert testimony from Dr. Kaltofen that the chemicals found at harmful levels on properties in the Class

Area can be specifically linked to the Arkema facility." ECF No. 264-1 at 25. But in reality, Plaintiffs cannot use common evidence to show that Arkema caused their damages.

Plaintiffs seek monetary damages due to property value diminution from environmental stigma. *See* ECF No. 264-1 at 28 ("Dr. Kilpatrick was able to assign 'impaired' property values based on relevant literature, empirical studies, and a sizeable body of work that supports the finding that proximity to environmental contamination and spread of information about the contamination diminish property value."). This theory does not require that Plaintiffs show that all properties in the class area were contaminated: "Nowhere have Plaintiffs alleged that stigma depends on the degree of actual concentration or measurements of chemicals that were deposited or remain on any given property . . . [because] stigma loss is about public *perception* that property value is *negatively affected despite contamination clean-up*." ECF No. 290 at 33 (emphasis in original). But this theory does require Plaintiffs to show that the Arkema Incident caused their stigmatic damages. As a result, Plaintiffs cannot simply point to Dr. Kaltofen's opinion that the Arkema Incident increased dioxins in the class area. The critical causation question is not whether the Incident spread dioxins, but whether the Incident diminished Plaintiffs' property values. *See* 5 Conte & Newberg, Newberg on Class Actions § 17:28, at 413–14 (4th ed. 2002) (distinguishing between "threshold general questions" of causation relating to the defendant's actions and the critical question relevant to certification of whether such conduct proximately caused the specific injuries suffered, which must be proved separately by class members).

Unfortunately for Plaintiffs, the only common evidence that demonstrates that the Incident caused their damages comes from Dr. Kilpatrick. In his report, Dr. Kilpatrick describes the mechanism for stigmatic diminution and uses trendline analysis to show that the Incident caused a class-wide diminution in property values. But as detailed in the section on *Daubert*, Dr.

Kilpatrick's opinions on diminution are unreliable and must be excluded. Without Dr. Kilpatrick's opinions, Plaintiffs must resort to individualized methods of proof to show that the Incident diminished property values. The only way to show a causal link in the absence of Dr. Kilpatrick's report is for Plaintiffs to go property by property. Perhaps recognizing the inherently individualized nature of this inquiry, Plaintiffs do not argue in their papers that they can prove causation on a class-wide basis without Dr. Kilpatrick. Given the extreme levels of individualized proof attendant to showing causation for thousands of properties, this prong weighs heavily against predominance.[22] *See Robertson v. Monsanto*, 287 F. App'x 354, 362 (5th Cir. 2008) (holding that individualized issues on causation and damages barred certification because even though a single incident caused plaintiffs injuries, "each plaintiff still must show that [the defendant's] negligence in causing the gas leak was proximately connected to the specific injuries complained of").

iii. Damages

Plaintiffs must also present substantial individualized evidence to prove their damages. Without Dr. Kilpatrick, whom Plaintiffs retained to "perform[] a mass appraisal on sales price data

[22] Arkema contends that causation also requires individualized inquiries into "the fate and transport of any particulate matter containing dioxins (which are already ubiquitous in the Crosby environment), whether anyone was actually exposed to airborne or deposited dioxin from the Crosby fires, whether dioxin is present on any property in a concentration sufficient to cause cognizable harm, and whether that dioxin is attributable to the releases at issue rather than some other source." ECF No. 285 at 20. Most of these inquiries are not necessary for Plaintiffs' theory of liability. For example, Plaintiffs need not prove that individual class members were exposed to dioxins in harmful quantities to show that the Incident diminished property values. Similarly, the alleged failure of Plaintiffs' experts to say with certainty that class members are at risk of developing health problems does not concern the stigmatic injury at the core of Plaintiffs' claims for damages. Thus, while the Court finds that causation requires undue amounts of individualized proof, several of the arguments Arkema puts forth to that end are inapposite

from the Class Area so that class-wide damages might be mechanically calculated by formula," Plaintiffs have no mechanism for calculating damages on a class-wide basis. ECF No. 264-1 at 22.

Two cases illustrate how the absence of Dr. Kilpatrick's opinions affects the predominance inquiry. The first is *Cannon v. BP Products North America, Inc.*, 2013 WL 5514284 (S.D. Tex. Sept. 30, 2013) (Costa, J.). There, a group of would-be class action plaintiffs hired Dr. Simons, a real estate economist, to show that BP's emissions permanently diminished property values in a certain area. *Id.* at *1. However, the court excluded Dr. Simons' opinions as unreliable because he failed to isolate the effects of BP's activity from other confounding variables. *See id.* at *7 ("In actuality, Simons does not, and cannot, know exactly what characteristic he isolated with his regression model—it could have been sulfur dioxide emissions, exceedances, events, bad press about the Refinery, or any other difference between the class area and control area that was not accounted for in his model[.]"). And because the plaintiffs "rel[ied] on Dr. Simons to (a) prove on a classwide basis that BP's wrongful conduct (through theories of negligence, nuisance, or trespass) caused a diminution in property value; and (b) calculate damages formulaically," the plaintiffs were "unable to show that 'the questions of law or fact common to class members predominate over any questions affecting only individual members.' " *Id.* at *16 (quoting FED. R. CIV. P. 23(b)(3)). The plaintiffs "provide[d] no alternative to Simon's methodologies to prove causation or damages, and the [c]ourt [could not] envision how a class action trial would operate without his testimony." *Id.* Absent Dr. Simons, "each of the roughly 14,300 putative Plaintiffs would have to prove damages by presenting appraisal figures before and after December 22, 2008 and would have to prove causation by presenting evidence the BP's wrongful conduct, and not some other source, caused the diminution in their property value." *Id.* Consequently, the court in *Cannon* held that individualized questions predominated such that certification was inappropriate.

The second case is *Cotromano v. United Technologies Corp.*, 2018 WL 2047468 (S.D. Fla. May 2, 2018). There, a group of plaintiffs "tender[ed] [Dr.] Kilpatrick in [an] effort to demonstrate that damages in th[e] putative class action, encompassing approximately 18,000 property owners, [were] susceptible to calculation on a class-wide, uniform basis throughout the proposed class area by application of 'mass appraisal' methodology." *Id.* at *8. After reviewing Dr. Kilpatrick's opinions, however, the district court held that he could not "reliably use sales trend analysis to determine a single percentage diminution for the entire proposed class area." *Id.* at *19. The district court also determined that Dr. Kilpatrick's efforts to use surveys to estimate diminution damages were unavailing. The court therefore excluded Dr. Kilpatrick's opinions. *Id.* And because the district court determined that Dr. Kilpatrick's opinions were "critical to the elements of commonality and predominance," the court recognized that the plaintiffs were "unable to satisfy the predominance element of Rule 23(b)" without him. *Id.* at *8, *19.

This case mirrors *Cannon* and *Cotromano*. The Court has recognized that "where individual damages cannot be determined by reference to a mathematical formula[] or calculation, the damages issue may predominate over any common issues shared by the class." *Regmund v. Talisman Energy USA, Inc.*, 2019 WL 2863926, at *7 (S.D. Tex. July 2, 2019) (Ellison, J.) (quoting *Steering Committee v. Exxon Mobil Corp.*, 461 F.3d 598, 602 (5th Cir. 2006)). The Fifth Circuit has also recently acknowledged that predominance is likely lacking where complicated questions of individual damages are at issue. *Earl v. Boeing Co.*, --- F.4th ---, 2021 WL 6061767, at *2 (5th Cir. Dec. 22, 2021). Without Dr. Kilpatrick's formulas, Plaintiffs must prove the amount by which each class member's property diminished in value. That demands a close look into the characteristics of each individual property, as well as the interplay between those characteristics and stigmatic decrements. Plaintiffs have not demonstrated a mechanism for review other than

going property by property. Given the highly individualized nature of that inquiry, the Court cannot find that common questions predominate.[23]

Contrary to Plaintiffs' assertions, their proposed Trial Plan does not mitigate the highly individualized nature of their negligence claim. Plaintiffs' proposed Trial Plan would proceed as follows. Phase One would address: (1) whether Arkema is at fault for the Incident; (2) whether Arkema's Act of God defense excuses it from liability; (3) the total quantity of contaminants released beyond the boundaries of the Crosby facility; (4) the composition of the contaminants released beyond the facility; (5) the nature and extent of injunctive relief in the form of site investigation, assessment, characterization, and remediation necessary to restore class members' properties to their pre-Incident condition; (6) the nature and extent of injunctive relief in the form of medical surveillance necessary to address class members' exposure to contaminants from the Incident; (7) the "appropriate, uniform methodology for assessing diminution in real property values" in the class area from the Incident; and (8) "[t]he amount of class-wide compensatory damages that may be awarded to the [c]lass by application of an approved formula." ECF No. 264-

[23] Another individualized inquiry stems from Plaintiffs' decision to seek certification for a class without temporal limitations. Plaintiffs ask the Court to certify a class that includes "all residents and real property owners located within a seven-mile radius of the Crosby, Texas, Arkema Chemical Plant." ECF No. 264 at 1. Because this class is not time-bound, it includes individuals who bought property in the class area years after the Arkema Incident. That raises additional issues, since a post-Incident purchaser might have had a "stigma discount" built into the price they paid. For that individual, diminution damages would result in an unearned windfall. *See also Exxon Mobil Corp. v. Albright*, 433 Md. 303, 423–24 (2013) (reasoning that "[a]llowing the plaintiffs to recover damages for a hypothetical and speculative diminution in market value that may never materialize is to permit them a potential double recovery," since some plaintiffs could sell their homes immediately after recovering and receive a windfall for the as-yet unrealized diminution); *see also Palmisano v. Olin Corp.*, 2005 WL 6777561, at *5 (N.D. Cal. July 5, 2005) (noting "serious concerns with the degree of speculation Dr. Kilpatrick's theory entails" because "[i]f plaintiffs could recover for a decline in value that had not yet been reflected in prices, they could sell their homes immediately and receive a windfall"). The temporal issue that inheres in Plaintiffs' proposed class therefore presents another individualized issue.

7 at 2. Phase Two would then address "any remaining amounts of individual items of property damages for class members," and would "take place only if the jury finds Arkema liable in whole or in part in Phase One." *Id.* at 3. In Phase Two, Plaintiffs contemplate that "a Special Master conducting streamlined mini-trials" or "stipulated binding procedures" would resolve "any remaining claims for individual property damages." *Id.* Plaintiffs propose that in the alternative, the Court might order individual items of property damage to be split off and pursued "through existing Texas small claims processes with the benefit of the liability finding as to Arkema in Phase One as *res judicata*." *Id.* at 4.

Plaintiffs' Trial Plan does not feature a typical bifurcation of class proceedings. Normally, bifurcated proceedings separate damages from liability. *See e.g.*, *Sterling v. Velsicol Chem. Corp.*, 855 F.2d 1188, 1197 (6th Cir. 1988) (reasoning that the plaintiffs could prove liability as a class and then submit individualized evidence of damages later). But Plaintiffs call for diminution damages to be addressed alongside standard issues of liability during Phase One. Plaintiffs' plan, then, commingles individualized evidence of causation and damages with common evidence of duty and breach. As a result, this plan does not defer the highly individualized inquiries to a separate phase. Because the Court has given Plaintiffs a "full opportunity to present . . . proposals for their preferred form of class treatment," it need not consider "other variations not proposed[.]" *Steering Committee*, 461 F.3d at 603–04.

In addition, even if Plaintiffs had proposed a true bifurcation, that structure would not manufacture predominance. The Fifth Circuit has made clear that "even though trial courts have flexibility in crafting bifurcated proceedings once a case is certified, the predominance inquiry . . . requires assessing all the issues in a case—including damages—and deciding whether the common ones will be more central than the individual ones." *Crutchfield v. Sewerage & Water Bd. of New*

Orleans, 829 F.3d 370, 378 (5th Cir. 2016). As a result, simply delaying the quantification of damages does not solve Plaintiffs' problems; Plaintiffs still present no common methodology for damages. In addition, *Prantil* requires the Court to discuss how a phased trial would actually proceed. 986 F.3d at 580. Plaintiffs, however, do not provide sufficient details regarding how such a trial would go. *See Espenscheid v. DirectSat USA, LLC*, 705 F.3d 770, 774 (7th Cir. 2013) (rejecting the plaintiffs' request for a collective action where the plaintiffs tried to mitigate individualized inquiries by presenting testimony from 42 "representative" members of the class without explaining how the representatives would be chosen). Plaintiffs' Trial Plan, then, is no panacea.

iv. Negligence Summary

Overall, Plaintiffs have failed to show that "questions of law or fact common to class members predominate over any questions affecting only individual members[.]" FED. R. CIV. P. 23(b)(3). Without Dr. Kilpatrick, Plaintiffs have no way of proving causation and damages absent individualized inquiries into thousands of properties. *See Cotromano*, 2018 WL 2047468, at *20 ("Plaintiffs do not need to prove actual contamination of individual properties to sustain their claims—but this does not eliminate individual assessments on damages. It only transports them to individualized inquiries, with all the same variables contributing to a determination on the extent of actual damages.").

In *Prantil*, the Fifth Circuit held that the Court's prior order was "wanting in its answer to Arkema's arguments that a trial of class claims would devolve into individualized inquiries[.]" *Plaintiff* 986 F.3d at 579. Plaintiffs were on notice that they needed to answer Arkema's arguments on predominance. But Plaintiffs put all their eggs in Dr. Kilpatrick's basket. Without his opinion

on diminution damages, Plaintiffs have not discharged their burden of demonstrating predominance under Rule 23(b)(3). The Court therefore **DENIES** certification of a Rule 23(b)(3) class on Plaintiffs' negligence claim.

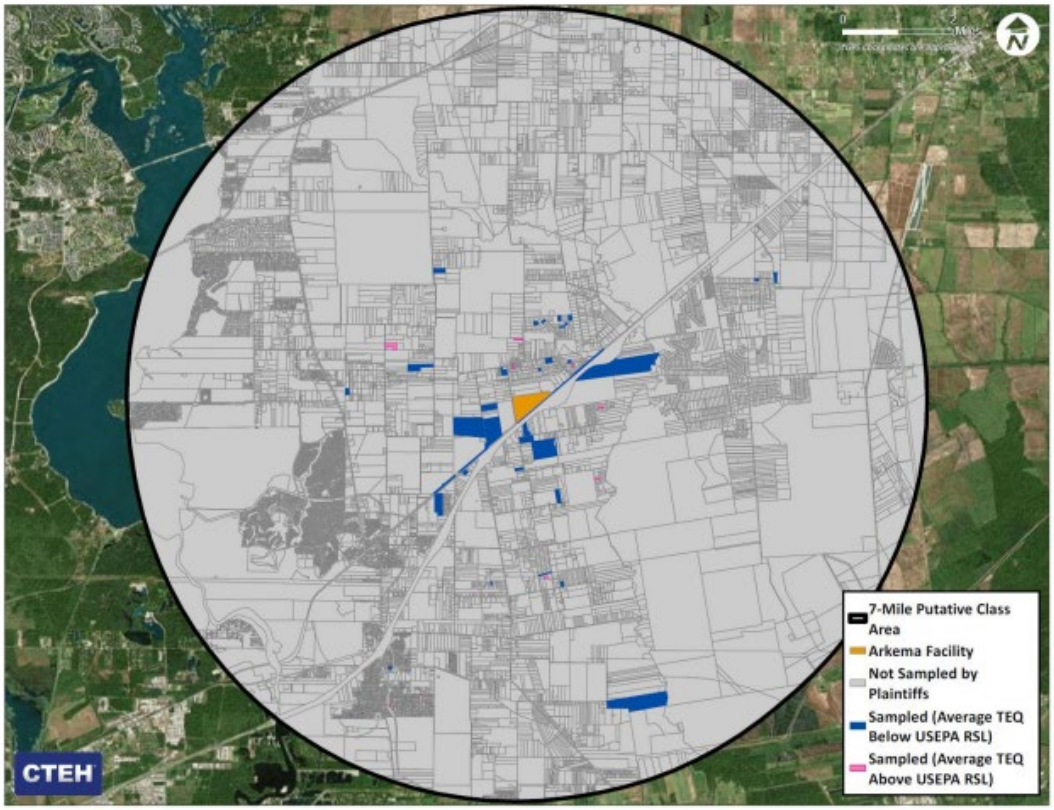
2. Trespass to Real Property

The above analysis on negligence compels a similar result on Plaintiffs' trespass claim. The elements of a trespass claim are "(1) the plaintiff owns or has a right to lawful[ly] possess real property; (2) the defendant entered the plaintiff's [property] and the entry was physical, intentional, and voluntary; and (3) the defendant's trespass caused injury to the plaintiff." *Wilen v. Falkenstein*, 191 S.W.3d 791, 798 (Tex. Ct. App.–Ft. Worth 2006). On the last set of motions, the Court said that the "inquiry into entry on Plaintiffs' properties revolves around a single incident—[Arkema's] actions or lack thereof during Hurricane Harvey and the resulting explosions. Because all injuries resulted from this single course of conduct, the focus will be on Defendant's actions, and common questions will predominate." ECF No. 169 at 32. Following the Fifth Circuit's command to engage Arkema's counterarguments, however, the Court now finds that common questions do not predominate.

Even if Plaintiffs use common evidence to prove that they have a right to lawfully possess real property, they cannot use common evidence to show that Arkema physically, intentionally, and voluntarily entered each of their properties in a manner that injured them. Plaintiffs have not conducted representative sampling of the class area, and the sampling that they have done indicates that contamination is highly varied. *See* ECF No. 231-2 at 16 (describing how Plaintiffs collected 127 surface soil samples from the class area, submitted 97 of them for testing, and discovered that 17 (17.5%) exceeded the proposed remediation goal of 4.8 pg/g for dioxins); *see* ECF No. 304 at.

61:5-9 (MR. THOMPSON: . . . "[T]here's no doubt that there are many properties that are contaminated well above the standards. There's also no doubt that there are -- there are properties that will not have been in the particular fallout zone."). This variance can be seen in Figure 2 from the expert report created by Dr. Glenn Millner:

Figure 2 Properties sampled by plaintiffs' experts (soil dioxins)



ECF No. 253-4 at 8. Plaintiffs' trespass claim would therefore require "individual inquiries" that would "overwhelm questions common to the class." *Halvorson v. Auto-Owners Ins. Co.*, 718 F.3d 773, 779 (8th Cir. 2013).

What's more, as with Plaintiffs' negligence claim, Plaintiffs must go property-by-property to show that Arkema's trespass caused injury and to quantify that injury. *See Corley v. Entergy Corp.*, 220 F.R.D. 478, 486 (E.D. Tex. 2004) (rejecting certification of a damages class on a trespass claim because "each landowner is entitled to damages based on the specific characteristics

of his or her land and the extent of the Defendants' trespass on his or her land" such that damages cannot be calculated on a class-wide basis). As with Plaintiffs' negligence claim, then, individualized inquiries into causation and damages overwhelm common inquiries into Arkema's conduct on Plaintiffs' trespass claim.[24]

Plaintiffs, for their part, suggest that the Court should follow in the footsteps of *Turner v. Murphy Oil USA, Inc.*, 234 F.R.D. 597 (E.D. La. 2006). In that case, the district court certified a class seeking damages from an oil spill. *Id.* at 601–02. The *Turner* court reasoned that "[t]he primary elements of proof for trespass are whether there was a physical invasion of the plaintiff's property by a defendant, and whether that invasion was unlawful." *Id.* at 609. The court then determined that the plaintiffs could satisfy the predominance prong because those "elements will

[24] The Court is also concerned that Plaintiffs' trespass claim is at odds with their damages model. In *Comcast*, the Supreme Court made clear that "a model purporting to serve as evidence of damages in [a] class action must measure only those damages attributable to that theory." 569 U.S. at 35. This Court has subsequently recognized that a class-wide damages approach must "track Plaintiffs' theories of liability," and that the district court must "rigorously examine[] proposed damages methodologies in putative class action cases for disconnects between damages and liability." *In re BP p.l.c. Sec. Litig.*, 2013 WL 6388408, at *17 (S.D. Tex. Dec. 6, 2013). Trespass requires a physical entry onto property. Plaintiffs' theory of damages, meanwhile, is predicated on stigmatic diminution that concerns "public perception." ECF No. 290 at 33. Indeed, Plaintiffs specifically state: "Nowhere have Plaintiffs alleged that stigma depends on the degree of actual concentration or measurements of chemicals that were deposited or remain on any given property." *Id.* Thus, there is a gap between Plaintiffs' trespass theory—which requires physical intrusion—and their damages theory—which does not. This disconnect is thrown into sharp relief in Plaintiffs' Trial Plan, which proposes that "each Class member will participate in the class-wide damages award regardless of whether it is ultimately found to be necessary, in the site characterization and remediation process, to perform work to restore that Class member's property to its pre-existing condition." ECF No. 264-7 at 3. Plaintiffs' only retort is that Arkema's *Comcast* argument "is mistakenly predicated on the notion that Dr. Kilpatrick 'opined that property values decreased more as one moves farther away from the Crosby facility.' " ECF No. 290 at 33 (quoting ECF No. 285 at 57). But that does not actually address the core of this issue. After criticizing Dr. Kilpatrick's opinion on the correlation between distance and property value, Arkema wrote: "More fundamentally, Dr. Kilpatrick's model does not measure damages allegedly attributable to any physical contamination." ECF No. 285 at 58. Plaintiffs do not respond to this charge, even though it forms the basis of the *Comcast* issue.

not require the [c]ourt to inquire extensively into individual cases for proof of liability." *Id.* But *Turner* does not control. That case was decided before more recent restrictions on class actions. In addition, the *Turner* court used the plaintiffs' sampling data to certify a smaller class area than was originally requested. *See id.* at 614 ("The Court agrees that Mr. Kaltofen's low sampling rate, together with the questions raised about the sampling technique and analysis, cannot support a finding at this juncture that Murphy crude oil likely could have traveled as far as Plaintiffs have alleged."). The smaller class area, in turn, helped the *Turner* court manufacture predominance. In this case, however, Plaintiffs have not presented sufficient data to permit the Court to *sua sponte* shrink the borders of the putative class area and preserve predominance.

The Court therefore **DENIES** Plaintiffs' request to certify a damages class for trespass due to a lack of predominance under Rule 23(b)(3).

3. Public Nuisance

The elements of a public nuisance claim are "an unreasonable interference with a right common to the general public" and "a special injury . . . distinct from the injury to the public at large." *Peiqing Cong. v. ConocoPhillips Co.*, 250 F. Supp. 3d 229, 233 (S.D. Tex. 2016). As with Plaintiffs' negligence and trespass claims, here too individualized issues related to causation and damages predominate. Even if Plaintiffs use common evidence to show that Arkema interfered with common rights of property ownership, they must also show that Arkema injured them in a manner distinct from any injury wreaked upon the public. As Plaintiffs make clear, however, the only class-wide damages they seek are "for diminution of value determined by common formula and supported by expert evidence." ECF No. 264-1 at 23. Without Dr. Kilpatrick, Plaintiffs lack their promised "opinion that regression analysis can account for property damage attributable to

the Arkema explosions and serve as an underpinning for an award of class-wide damages in the Rule 23(b)(3) class action." *Id.* at 29. Individualized inquiries into causation and damages will therefore predominate on Plaintiffs' public nuisance claim as well. *See also In re Rail Freight Fuel Surcharge Antitrust Litig.*, 934 F.3d 619, 623–24 (D.C. Cir. 2019) (affirming the district court's holding that "the need for 'individualized inquiries to determine which of at least 2,037 (and possibly more) class members were actually injured by the alleged conspiracy,' . . . precluded a finding of predominance"). As a result, the Court **DENIES** certification of a Rule 23(b)(3) class on Plaintiffs' public nuisance claim.

4. Summary

Plaintiffs have moved to certify a Rule 23(b)(3) damages class on common law claims of negligence, trespass, and public nuisance.[25] Excluding Dr. Kilpatrick's opinion on diminution damages, however, pulls the rug out from under Plaintiffs' case. Without Dr. Kilpatrick's opinions, the Court cannot find that common issues predominate over complex individualized issues

[25] Plaintiffs clarified at the hearing that they do not seek a Rule 23(b)(3) class for their RCRA or CERCLA claims. *See* ECF No. 304 at 80:7-9 ("THE COURT: Do you -- am I correct that you're asking for a (b)(2) class on CERCLA and RCRA and the (b)(3) class on Texas common law remedies? MR BUNCH: Yes, your Honor."). That makes sense, since "[f]ederal courts addressing the issue have universally held that RCRA citizen suits provide no damages remedy." *Tyco Thermal Controls LLC v. Redwood Indus.*, 2010 WL 3211926, at *18 (N.D. Cal. Aug. 12, 2010) (quoting *Express Car Wash Corp. v. Irinaga Bros.*, 967 F. Supp. 1188, 1193 (D. Or. 1997)); *see 325-343 E. 56th St. Corp. v. Mobil Oil Corp.*, 906 F. Supp. 669, 684 (D.D.C. 1995) ("Courts confronting this issue have almost unanimously concluded that RCRA's citizen suit provisions, 42 U.S.C. § 6972(a)(1)(A) and (a)(1)(B), allow for abatement and injunctive measures, but not for money damages."); *Miller*, 2018 WL 4762261, at *9 ("It is precisely because the RCRA is addressed to an imminent or ongoing risk of harm from the presence of hazardous waste that the remedy that the statute provides is limited to injunctive relief."). The same goes for Plaintiffs' CERCLA claim. *See Polcha v. AT & T Nassau Metals Corp.*, 837 F. Supp. 94, 96 (M.D. Pa. 1993) ("[T]here is no private cause of action under either CERCLA or RCRA to recover damages for personal injuries suffered as a result of violations of those statutes.").

regarding causation and damages. The Court therefore **DENIES** Plaintiffs' request for certification under Rule 23(b)(3).[26]

D. Plaintiffs' Motion to Certify a Rule 23(b)(2) Injunctive-Relief Class

To certify a Rule 23(b)(2) injunctive class, meanwhile, Plaintiffs must demonstrate that "the party opposing the class has acted or refused to act on grounds that apply generally to the class, so that final injunctive relief or corresponding declaratory relief is appropriate respecting the class as a whole." FED. R. CIV. P. 23(b)(2). In the Fifth Circuit, plaintiffs seeking Rule 23(b)(2) certification must meet three requirements: (1) "class members must have been harmed in essentially the same way"; (2) "injunctive relief must predominate over monetary damage claims"; and (3) "the injunctive relief sought must be specific." *Maldonado*, 493 F.3d at 524. The class must also be cohesive. *Id.* Here, Plaintiffs seek to certify a Rule 23(b)(2) class for two types of injunctive relief: property remediation and medical surveillance. For the reasons set out below, the Court grants this aspect of Plaintiffs' Motion and certifies a Rule 23(b)(2) class.

1. Standing

As detailed above, while Rule 23(f) "allows a party to appeal only the issue of class certification, '[s]tanding is an inherent prerequisite to the class certification inquiry.' " *Rivera*, 283 F.3d at 319 (quoting *Bertulli*, 242 F.3d at 294). Consequently, "standing may—indeed must—be addressed even under the limits of a rule 23(f) appeal." *Id.* In light of this principle, the Fifth Circuit

[26] The Court does not reach the issue of standing for the proposed Rule 23(b)(3) class because "the Supreme Court has repeatedly instructed that we should first decide whether a proposed class satisfies Rule 23, before deciding whether it satisfies Article III—and . . . there is no need to answer the latter question if the class fails under the former." *Flecha v. Medicredit, Inc.*, 946 F.3d 762, 768–69 (5th Cir. 2020) (citing *Amchem*, 521 U.S. at 612).

"must" have addressed standing in *Prantil* when it ignored Arkema's arguments on this issue and remanded the case. Nevertheless, because the Court can "proceed no further" if Plaintiffs lack standing, the Court briefly addresses Arkema's arguments. *California v. Texas*, 141 S. Ct. at 2113.

The "irreducible constitutional minimum of standing" requires a plaintiff to prove "(i) that he suffered an injury in fact that is concrete, particularized, and actual or imminent; (ii) that the injury was likely caused by the defendant; and (iii) that the injury would likely be redressed by judicial relief." *TransUnion LLC v. Ramirez*, 141 S. Ct. 2190, 2203 (2021) (citing *Lujan v. Defenders of Wildlife*, 504 U.S. 555, 560–61 (1992)). "[S]tanding is not dispensed in gross; rather, plaintiffs must demonstrate standing for each claim that they press and for each form of relief that they seek[.]" *Id.* at 2208. For purposes of forward-looking injunctive relief, the risk of future harm must be "material" and "sufficiently imminent and substantial." *Id.* at 2210 (citing *Clapper v. Amnesty Int'l USA*, 568 U.S. 398, 414 n.5 (2013)). "Article III does not give federal courts the power to order relief to any uninjured plaintiff, class action or not." *Id.* at 2208 (quoting *Tyson Foods, Inc. v. Bouaphakeo*, 577 U.S. 442, 466 (2016) (ROBERTS, C. J., concurring)).

Previously, the Court found that Plaintiffs have suffered a concrete, particularized, and actual or imminent injury-in-fact through "chemical exposure[,] . . . which allegedly creates severe health risks. This injury cannot be speculative, because it has already occurred." ECF No. 169 at 29 (internal citations omitted). That finding remains true today. Named plaintiffs Larry and Tanya Anderson found ash "scattered" all over their property. ECF No. 125-23. The ash had a "metallic feel" and was "real [sic] easy to crumble." *Id.* Beverly Flannel breathed acrid air that burned her eyes and smelled "like mixtures of different kinds of chemicals" for four days after the fires at the Crosby facility. *Id.* Roland Flannel's car was covered with soot, his garage roof was "black" from fallout, and he found "mushy black" sludge in his flower beds. *Id.* Corey Prantil discovered ash

throughout his yard and pastures, and the contaminated air gave him an instant headache and made his nose and eyes burn. *Id.* Betty Whatley saw "large amounts" of flaky ash entering her yard, and her husband Ronald's hay was "covered up with some kind of chemical." *Id.* In conjunction with expert opinions regarding the harmful nature of the chemicals released during the Arkema Incident, these facts satisfy the injury requirement of standing.[27] The named plaintiffs have been exposed to harmful contaminants that beget harmful health effects.

The Court also stands by its ruling that Plaintiffs have demonstrated sufficient causation for standing purposes. As the Court stated in its previous order:

> Dr. Kaltofen conducted extensive comparisons between ash and particulates found on-site at the Arkema facility and off-site throughout the class area. [ECF No. 125-6 at 8, 11, 13-15, 18.] He traced all the identified chemicals to either the organic peroxides, the refrigerated trailers, or chemicals produced by the decomposition of other chemicals known to be at the facility at the time of the explosions. [ECF No. 125-6 at 4-5, 8, 13-15, 18.] The instrumental analysis indicated that the same elements were present in ash samples collected both at the facility and off-site throughout the class area, suggesting that they derived from the same source. [ECF No. 125-6 at 10-11.]

ECF No. 169 at 29. This work, in conjunction with Dr. Kaltofen's additional efforts to compare Plaintiffs' samples to relevant background studies, supports the Court's finding that Arkema caused the injury here.

As for redressability, both of Plaintiffs' requested injunctions pass muster. Plaintiffs' proposed property remediation program will clean up properties in the class area, reducing exposure to harmful contamination for all class members. Plaintiffs' proposed medical surveillance program, meanwhile, will inform class members about heightened health risks,

[27] Importantly, as discussed in more detail below, the injury is not just the physical deposition of contamination on Plaintiffs' properties; it is the exposure to contamination that they suffered as a result of that deposition, as well as the exposure that results from the deposition on other properties in the class area.

allowing them to take preventative action and seek early diagnosis and treatment. Both programs, then, will mitigate the risks imposed by exposure to the contamination from the Arkema Incident. The Court therefore finds that Plaintiffs have standing to request property remediation and medical surveillance injunctions.

Before moving on, the Court also addresses Arkema's position on "absent" class members. Arkema argues that "the available evidence demonstrates that the proposed class contains far, far more than a *de minimis* number of unharmed members who lack Article III standing." ECF No. 285 at 16. But " 'standing doctrine is primarily concerned with ensuring that a real case or controversy exists.' " *Earl v. Boeing Co.*, 339 F.R.D. 391, 412 (E.D. Tex. 2021) (quoting 1 William B. Rubenstein, Newberg on Class Actions § 2:3 (5th ed.)). Rule 23, meanwhile, "is 'designed precisely to address concerns about the relationship between the class representative and the class,' making [it] the 'more appropriate tool' to assess standing issues related to absent class members at class certification." *Id.* (quoting 1 William B. Rubenstein, Newberg on Class Actions § 2:3 (5th ed.)). Here, Arkema improperly attempts to "collapse the standing inquiry into the class certification inquiry." *Fort Worth Emps.' Ret. Fund v. J.P. Morgan Chase & Co.*, 862 F. Supp. 2d 322, 333 (S.D.N.Y. 2012). "[T]he standing of the named plaintiffs, and not that of the absent class members, is implicated at class certification." *Earl*, 339 F.R.D. at 414; *see Hossfeld v. Allstate Ins. Co.*, 2021 WL 4819498, at *3 (N.D. Ill. Oct. 15, 2021) (recognizing that *TransUnion* did not decide whether every class member must demonstrate standing before certification).[28] Writ large, then, the Court finds that Plaintiffs have demonstrated standing for both of their requested injunctions.

[28] In the alternative, the Court also finds that Plaintiffs have demonstrated sufficient harm to unnamed class members to satisfy Arkema's proposed inquiry. As discussed in the coming sections, the combination of Plaintiffs' sampling efforts, Dr. Auberle's dispersion model, Dr. Kaltofen's opinions on dioxins in the class area, and the numerous expert opinions on mobilization

2. Plaintiffs' Proposed Property Remediation Injunction

Plaintiffs first seek an injunction to establish "a site characterization and remediation program." ECF No. 264-1 at 10. Plaintiffs request "uniform testing of the Class Area . . . to restore appropriate properties [and] ensure that recontamination through migration does not occur." *Id.* Plaintiffs state that "[t]he proposed cleanup goals are to remediate to a carcinogenic risk of one in a million or 1E-6 and a noncarcinogenic hazard quotient of 1, consistent with USEPA guidance for CERCLA." *Id.* Plaintiffs suggest that this can be achieved for soil "by aligning the cleanup goal with the USEPA [RSL] for Dioxin and Dioxin-like compounds of 4.8 pg/g." *Id.* at 10–11. Plaintiffs originally proposed a target of "12.149 pg/ft^2 for wipe samples" for interior spaces, which was based on World Trade Center benchmarks. *Id.* at 11. However, in light of expert testimony indicating that such a low level is not practically attainable, Plaintiffs now propose using 20 pg/ft^2 for interiors. *See* ECF No. 231-2 at 21; *see* ECF No. 303 at 34:9-17. Plaintiffs suggest that after every property is tested, only those properties with contamination in excess of these levels will be physically remediated. *Id.* For soil, Plaintiffs request "topsoil replacement and home dust removal techniques" with off-site disposal to facilitate complete removal of the Arkema contaminants. *Id.* at 11–12. Fill material will be used to restore any excavated areas. *Id.* at 12. Interior cleaning techniques will use specialized equipment and include "attic insulation replacement, attic cleaning, intensive cleaning of living spaces and floors, carpet cleaning, furniture cleaning and HVAC duct cleaning." *Id.* Plaintiffs request that occupants and pets be relocated while this work is occurring. *Id.*

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and resuspension indicate that the lion's share of class members in this case have suffered an injury traceable to Arkema.

i. Prior rulings

Previously, the Court certified Plaintiffs' proposed Rule 23(b)(2) class to pursue a property remediation injunction. ECF No. 169 at 27–28. The Court stated that "Plaintiffs' allegations stem from a single course of conduct by [Arkema] that Plaintiffs argue negligently allowed the chemical exposure to occur." *Id.* at 27. The Court wrote that "remediation is better suited to class-wide resolution than to individual trials," as "[i]ndividual clean-up attempts would be ineffectual, because landowners could still be exposed as they move throughout the class area." *Id.* The Court therefore reasoned that "a remediation program can be applied class-wide—perhaps one that orders testing of Plaintiffs' properties and cleanup of contaminants, as described in [Mr.] Glass's expert report." *Id.*

The Fifth Circuit took issue with the Court's analysis because it did "not satisfy the requirement that injunctive relief be reasonably specific." *Prantil*, 986 F.3d at 581. "[M]ore is needed than a common failure by the defendant and the prospect that all class members could realize some benefit if the defendant is compelled to act or desist." *Id.* " 'Rule 23(b)(2) does not require that every jot and tittle of injunctive relief be spelled out at the class certification stage,' but some 'reasonable detail' as to the 'acts required' is necessary." *Id.* (quoting *Yates v. Collier*, 868 F.3d 354, 368 (5th Cir. 2017)) (cleaned up). Still, the Fifth Circuit recognized that "[t]he current record does not compel the conclusion that Plaintiffs' medical and property injuries are incapable of being addressed by classwide injunctions. For instance, it is not necessarily fatal to a uniform scheme of property remediation that certain properties may contain higher concentrations of contaminants than others, provided Plaintiffs can identify a common method of remediation and some reasonable standard by which remediation might be assessed." *Id.* at 582. The Fifth Circuit therefore asked the Court to "evaluat[e] the particulars of each injunction on remand . . . [and]

arrive at a nuanced assessment of whether Plaintiffs' claims for relief can be effectively addressed in a class action." *Id.*

ii. Whether class members have been harmed in essentially the same way

Certification under Rule 23(b)(2) "centers on the defendants' alleged unlawful conduct, not on individual injury." *In re Rodriguez*, 695 F.3d 360, 365 (5th Cir. 2012) (citing *In re Monumental Life Ins. Co.*, 365 F.3d 408, 415 (5th Cir. 2004)); *see Adamson v. Bowen*, 855 F.2d 668, 676 (10th Cir. 1988) (emphasizing that although "the claims of individual class members may differ factually," Rule 23(b)(2) is a proper vehicle for challenging "a common policy"). Thus, Rule 23(b)(2) does not demand that the defendant's conduct "uniformly affect[]—and injur[e]—each [class member]." *M.D. ex rel. Stukenberg v. Perry*, 675 F.3d 832, 847 (5th Cir. 2012). To that end, the Fifth Circuit has cited with approval the Advisory Committee's position that "[a]ction or inaction is directed to a class within the meaning of [Rule 23(b)(2)] even if it has taken effect or is threatened only as to one or a few members of the class, provided it is based on grounds which have general application to the class." *Id.* at 848 (quoting FED. R. CIV. P. 23(b)(2) 1966 Amendment Advisory Committee Note); *see* 7A Charles Alan Wright, Arthur R. Miller & Mary Kay Kane, Federal Practice & Procedure § 1775 (2d ed. 1986) ("All the class members need not be aggrieved by or desire to challenge the defendant's conduct in order for some of them to seek relief under Rule 23(b)(2).").

The Court previously wrote that "Plaintiffs' allegations stem from a single course of conduct by [Arkema] that Plaintiffs argue negligently allowed the chemical exposure to occur." ECF No. 169 at 27. That has not changed. Plaintiffs' allegations center on Arkema's approach to Hurricane Harvey and the ramifications of that conduct. Because Arkema's behavior in the leadup

to Hurricane Harvey is common to all class members, Arkema has acted on grounds that apply to the entire class. *See Prantil*, 986 F.3d at 582 ("[T]here is stronger evidence [here, as compared to *Stukenberg*,] that through its response to a specific event, Hurricane Harvey, Arkema 'acted or refused to act on grounds that apply generally to the class.' "); *see also Guenther v. BP Ret. Accumulation Plan*, 2021 WL 1216377, at *9 (S.D. Tex. Mar. 12, 2021), *report and recommendation adopted*, 2021 WL 1215851 (S.D. Tex. Mar. 31, 2021) (certifying a class where the alleged harm "flow[ed] from company-wide representations made to Sohio heritage plan participants"). These facts militate in favor of granting Rule 23(b)(2) certification.

Still, the Court cannot certify a 23(b)(2) class if "only a negligible proportion of proposed class members [are] properly seeking injunctive relief[.]" *Monumental Life*, 365 F.3d at 416 (citing *Bolin v. Sears Roebuck & Co.*, 231 F.3d 970 (5th Cir. 2000)). The Fifth Circuit has determined that "forty percent of the class benefiting from an injunction is not sufficient to certify under (b)(2)." *Casa Orlando Apartments, Ltd. v. Fed. Nat. Mortg. Ass'n*, 624 F.3d 185, 200 (5th Cir. 2010). "Rule 23(b)(2) certification is also inappropriate when the majority of the class does not face future harm." *Maldonado*, 493 F.3d at 525. Here, Arkema contests that all class members have not been exposed to the same contaminants in the same amounts, nor have all class members been put at risk of harm absent mitigation.[29]

[29] A hypothetical throws this concern into sharp relief. Imagine if Arkema's emissions had been confined to a ball of ash that fell onto a single property. If the ball of ash remained confined to that property, the Court could not conclude that Arkema's conduct harmed people across a 154-mile area in essentially the same way. Logically, then, Plaintiffs must present some class-wide evidence of contamination to show that members were harmed in the same way. *See Monumental Life*, 365 F.3d at 416 (certifying an injunctive class when "between one million and 4.5 million of 5.6 million issued policies remain in-force" because "the proportion is sufficient, absent contrary evidence from defendants, that the class as a whole is deemed properly to be seeking injunctive relief").

Arkema does have some solid evidence to support its position. Plaintiffs' sampling program covered just 0.23% of the class area. *See* ECF No. 285-3 (Exhibit 25) at 23 ("[T]here is no evidence that can properly be extrapolated to the proposed class area since plaintiffs only sampled properties accounting for 0.23% of the total class area."). Some of Plaintiffs' samples exceeded the mean dioxin levels from Dr. Kaltofen's background studies, but few exceeded the maximum levels from those studies. The mean of Plaintiffs' samples also falls below the means from the background studies, leading Arkema's experts to conclude that there is no evidence of elevated dioxins from the Arkema Incident. *See* ECF No. 285-3 (Exhibit 23) at 13 (reasoning that "[t]he available data provides no evidence for any area wide dioxin impact from the Arkema events" because "soils within the proposed Class Area were not measurably impacted by dioxins from the Arkema events"). Thus, Plaintiffs' samples do not conclusively indicate that the Arkema Incident exposed most class members to heightened levels of dioxins immediately following the explosions.

Still, properly conceptualizing the harm here permits the Court to find that class members were harmed in essentially the same way. Plaintiffs write that "all Class members benefit from (1) site characterization performed on a class-wide basis; (2) having remedial measures available if needed; and (3) having harmful toxicants cleaned up around the neighborhood where they live, work and travel every day." ECF No. 290 at 23. This understanding of the benefits of remediation indicates that even those class members whose properties do not require physical decontamination have still been harmed by the Incident. As class members move through the class area, and as contaminants from the Incident mobilize and resuspend, those individuals are exposed to contaminants that were not originally deposited on their properties. The alleged harm here is not

the immediate physical contamination of a select number of properties; it is exposure to contamination across the class area for all class members.

Plaintiffs also present evidence to support this conceptualization of harm. For example, Dr. Kaltofen opines that class members as a group have been subjected to excessive amounts of dioxins based on Plaintiffs' samples, a comparison of chemicals at the Crosby facility with the contaminants found off-site, a physical analysis of the chunks of ash and debris found on properties after the Incident, and models of distribution from Trinity Consultants. ECF No. 125-6 at 4–18, ECF No. 231-3 at 7–13. Dr. Kaltofen provides a scientific basis for his position that wind and water are moving contamination around the class area. ECF No. 261-1 at 33. Furthermore, there is evidence in the record to demonstrate that class members move through the area.[30] *See e.g.*, ECF No. 125-24 at 138:10–139:19. Additionally, Dr. Kaltofen extrapolates from interior samples to conclude that dioxins have already begun to concentrate in certain homes.[31] ECF No. 254-3 at 5. Plus, the record indicates that contaminants from the Incident are toxic and can catalyze health effects. *See* ECF No. 267-2 (Exhibit C) at 6 (noting that "[t]he finding of TCDD deposited in the soils described by Dr. Kaltofen and the report of Shannon Thompson that quantified the other exposures to TCDD demonstrate that the carcinogenic material was released and is available for the population to encounter"); *see id.* at 8 (recognizing that many studies have shown "the

[30] Arkema's Reply directs the Court to the Fifth Circuit's holding in *Prantil* that "[a]n *assumption* about the movement of persons throughout the class area" is insufficient; "scientific evidence supporting the conclusion that the movements of class members could result in exposure sufficient to cause cognizable harm" is required. 986 F.3d at 579 (emphasis added). Here, the Court *finds* that contamination on one property poses a risk to other class members based on evidence concerning class member movement and scientific evidence about the resuspension and concentration of persistent contaminants like dioxins.

[31] A vacuum bag sample taken in the immediate aftermath of the fires, though heavily disputed by Arkema, further indicates that contamination from outside areas has been tracked into indoor areas where it can concentrate over time. ECF No. 282-4 (Thompson Deposition) at 108:22–109:3.

likelihood of Dioxins and Dioxin-like compounds producing cancer in test animals and humans," and highlighting "[t]here is adequate data in the scientific reports of the USEPA cited in the EPA Integrated Risk Information System (IRIS) reporting system demonstrating the relationship of exposure to TCDD and cancers"). In addition, Plaintiffs' air modeling expert found that the plume from the Incident covered a large portion of the class area, and that "[a] seven-mile . . . radius from the Arkema facility includes a reasonable area for defining the persons and properties most impacted by particulate matter from the three principal Arkema events." ECF No. 231-1 at ¶ 5.6. Based on this collection of evidence, the Court finds that Plaintiffs have demonstrated that sufficient class members have been harmed by the Arkema Incident in essentially the same way.

Plaintiffs have shown that Arkema acted on grounds that apply to the entire class, and that far more than a "negligible proportion of proposed class members [are] properly seeking injunctive relief[.]" *Monumental Life*, 365 F.3d at 416. Here, properly conceptualizing the harm to class members as health-based exposure rather than property-based contamination permits the conclusion that Plaintiffs have demonstrated that class members have been harmed in essentially the same way.

iii. Cohesion

Class cohesion is closely related to the idea that class members were harmed in essentially the same way. Cohesion requires that an injunctive class be so homogenous that few "conflicting interests" exist between class members. *Allison*, 151 F.3d at 413. Cohesion is necessary so that the injunctive remedy might be "indivisible," as the defendant's conduct "can be enjoined or declared unlawful only as to all of the class members or as to none of them." *Dukes*, 564 U.S. at 360.

Arkema spills a great deal of ink contending that individualized issues relating to exposure, injury, and causation destroy cohesion in this case.

On exposure, Arkema notes that Plaintiffs have not conducted representative sampling of the class area. ECF No. 285 at 22. Of this, there can be no doubt. Plaintiffs took 75% of their samples within two miles of the Crosby facility, 7% of their samples from between four and seven miles of the facility, and nearly all their samples south and west of the facility. *Id.* The air models in this case do not fully cure this issue. Mr. Auberle's model suggests that 48% of the class area was initially affected by particulate matter. *Id.* at 23. The ambient air model from Trinity Consultants, meanwhile, does not address where particulates were ultimately deposited. *Id.* at 24. In Arkema's eyes, then, Plaintiffs cannot offer "a shred of evidence . . . to determine on a class-wide basis whether members of the proposed class or their properties were exposed to dioxins." *Id.* at 25–26. Arkema views this as strike one against cohesion, arguing that it is difficult to determine that class members have been similarly exposed.

On injury, Arkema contends that Plaintiffs "fail[] to put forward common evidence that could be used to prove injury or substantial risk of future injury on a class-wide basis." ECF No. 285 at 26. Arkema says that Plaintiffs' experts agree that "additional sampling and the performance of a robust human-health risk assessment would be required to determine whether and to what extent any harm or risk of harm exists for any property or individual in the putative class." *Id.* at 3 (citing ECF No. 285-1 (Exhibit 4) at 45:23–46:5). Arkema also argues that Plaintiffs' sampling provides "no evidence of harm that could support a class-wide determination of injury." *Id.* at 27. In addition, Arkema takes issue with Plaintiffs' conservative remediation levels. *Id.* at 28–29. And Arkema suggests that the very nature of Plaintiffs' injunctive relief—namely, site characterization followed by physical remediation where necessary—indicates that there is no way to tell on a

class-wide basis which properties were affected by the Incident. Arkema views this as strike two against cohesion, arguing that it is difficult to determine that class members have been similarly injured.

On causation, Arkema contends that Plaintiffs cannot substantiate the proposition that individuals throughout the class area were injured by dioxins because Dr. Kaltofen's opinions are unreliable. Arkema also notes that because dioxins are released from many different sources and activities in the class area—i.e., exhaust from vehicles and locomotives, urban emissions, structure fires, trash burning, and barbeque restaurants—Plaintiffs cannot link elevated levels of dioxins to the Arkema Incident. Arkema views this as strike three against cohesion, arguing that it is difficult to determine that the Arkema Incident is the root cause of the class members' injuries.

Generally, however, Arkema is barking up the wrong tree on the issue of cohesion. The critical predicate of an injunctive class is common behavior by the defendant toward the class, not common effects on the class. *See Yates*, 868 F.3d at 366 ("It is well-established that '[i]nstead of requiring common issues, [Rule] 23(b)(2) requires common behavior by the defendant toward the class.' "); *see* 2 William Rubenstein, et al., Newberg on Class Actions § 4:28 (5th ed.) ("While the Rule looks for grounds that 'apply generally' to the class, it is well-settled that the defendant's conduct described in the complaint need not be directed or damaging to every member of the class."). Nonetheless, Arkema's arguments here are primarily directed toward individual differences in the class. Indeed, Arkema puts forth these arguments to attack cohesiveness under Rule 23(b)(2) *and* predominance under Rule 23(b)(3). Such a "dogged focus on the factual differences among the class members appears to demonstrate a fundamental misunderstanding of [Rule 23(b)(2)]." *Walters v. Reno*, 145 F.3d 1032, 1047 (9th Cir. 1998). This is not a case where each individual class member requires a different injunction. The fact that physical remediation

might differ depending on the results of site characterization does not turn a single injunction into a series of individualized ones. All class members seek unified relief in the form of reduced contamination in the class area. That Arkema might have to go property by property to facilitate that relief does not change the fact that the relief is directed toward alleviating class-wide exposure. *See also* ECF No. 284-4 40:22–41:7 ("This is an area of concern because people may be going through this working, living and they will pick up the exposure through injection, inhalation, depending on particle size. It can get on food, be in the dust, breathe it in. They may actually get into the water supply if it's surface water supply and they're using it for something. That is exposure. That is a toxicological concern."). The Court therefore concludes that the individualized issues identified by Arkema do not defeat cohesion here.

Arkema's citations to caselaw are also unavailing. Arkema directs the Court to *M.D. ex. Rel. Stukenberg v. Perry*, 675 F.3d 832 (5th Cir. 2012). In that case, the plaintiffs sought certification to address injuries resulting from systemic deficiencies in Texas's administration of the Permanent Managing Conservatorship. *Id.* at 835. The district court certified the class and approved the plaintiffs' request for a formation of "special expert panel[s]" to review individual cases and "implement appropriate remedial steps." *Id.* at 847. The Fifth Circuit, however, took issue with this tack. The Fifth Circuit held that this relief improperly entitled individual class members to different injunctions. *Id.* Consequently, the Fifth Circuit determined "that the requested individual relief implicitly establishes that at least some of the proposed class's underlying claims allege individual injuries that are not uniform across the class; thus, as currently pleaded, the proposed class lacks cohesiveness to proceed as a 23(b)(2) class." *Id.* In *Prantil*, however, the Fifth Circuit stated: "We do not agree with Arkema that our decision in [*Stukenberg*] necessarily precludes all forms of injunctive relief for the proposed class." 986 F.3d at 581. After

all, in this case "there is stronger evidence that through its response to a specific event, Hurricane Harvey, Arkema 'acted or refused to act on grounds that apply generally to the class.' " *Id.* at 582. The Court agrees. The evidence of Arkema's response to Hurricane Harvey indicates that it "acted or refused to act on grounds that apply generally to the class." FED. R. CIV. P. 23(b)(2). And unlike in *Stukenberg*, Plaintiffs' requested relief does not require individually tailored injunctions; the class-wide injunction will ultimately limit class-wide exposure to contamination.[32] The cut and thrust of the evidence on mobilization, resuspension, concentration, and class member movement in the record is that without remediation efforts, all class members will remain at risk. *Stukenberg* therefore does not compel a result for Arkema.

On appeal, the Fifth Circuit implied that the record in this case could support a finding that the class was cohesive. *See Prantil*, 986 F.3d at 582 ("The current record does not compel the conclusion that Plaintiffs' medical and property injuries are incapable of being addressed by

[32] Arkema also points the Court to *Ebert v. General Mills, Inc.*, 823 F.3d 472 (8th Cir. 2016). There, the Eighth Circuit reversed a district court's grant of class certification in an environmental contamination lawsuit. *Id.* at 475. The plaintiffs owned residential properties in a neighborhood that was allegedly contaminated by General Mills. *Id.* The Eighth Circuit ultimately held that the plaintiffs could not show cohesion under Rule 23(b)(2) because myriad individualized considerations affected the determination of liability. *Id.* at 481. The Eighth Circuit also concluded that remediation efforts would have to be unique for each class member, which was "most easily exemplified by the fact that some class members (and all of the named plaintiffs) have received customized VMS systems and some have not, [and] some tested properties evidenced the existence of TCE soil vapors at widely varying levels and some did not." *Id.* But *Ebert* is distinguishable. Here, while there are varying levels of contamination in the class, the Fifth Circuit stated in *Prantil* that "it is not necessarily fatal to a uniform scheme of property remediation that certain properties may contain higher concentrations of contaminants than others, provided Plaintiffs can identify a common method of remediation and some reasonable standard by which remediation might be assessed." 986 F.3d at 582. Plaintiffs have identified common methods of remediation for exterior and interior spaces, as well as common standards for remediation. Plaintiffs' remediation proposal calls for the same kind of cleanup—excavation and off-site disposal for exteriors, and a multi-step cleaning process for interiors—for properties with contamination that exceeds certain levels. Unlike in *Ebert*, then, different injunctions are not required for every class member.

classwide injunctions."). On remand, the Court finds that the putative class *is* sufficiently cohesive such that members' injuries can be addressed by a class-wide injunction. By focusing on Arkema's conduct, conceptualizing their harm as one of class-wide exposure, and presenting evidence to support that conceptualization, Plaintiffs have shown that the class is sufficiently cohesive.

iv. Whether injunctive relief predominates over monetary demands

Arkema also argues that Plaintiffs' bid for certification comes up short here because injunctive relief does not predominate over monetary demands. The Court disagrees.

"[I]ndividualized monetary claims belong in Rule 23(b)(3)," not in Rule 23(b)(2). *Dukes*, 564 U.S. at 362. Thus, "a remedy requiring Defendants to do nothing more than write a check" cannot "properly be viewed as an injunction." *Barraza v. C. R. Bard Inc.*, 322 F.R.D. 369, 387 (D. Ariz. 2017). Some courts have determined that "an injunction that requires a defendant to remedy the [alleged] harm that the defendant's past actions have [allegedly] caused is an injunction in name only—i.e., it is the functional equivalent of ordering compensatory damages, which means that such an 'injunction' is not properly viewed as injunctive relief at all." *Miller v. D.C. Water & Sewer Auth.*, 2018 WL 4762261, at *10 (D.D.C. Oct. 2, 2018) (Jackson, J.). Notwithstanding *Miller*, however, the Supreme Court stated in *Meghrig* that, "[u]nder a plain reading of [RCRA's] remedial scheme, a private citizen suing under § 6972(a)(1)(B) could seek a mandatory injunction, i.e., one that orders a responsible party to 'take action' by attending to the cleanup and proper disposal of toxic waste, or a prohibitory injunction, i.e., one that 'restrains' a responsible party from further violating RCRA." 516 U.S. at 484.

Here, Plaintiffs' requested injunction would order Arkema to take action by attending to the cleanup and proper disposal of its toxic waste products. That fits squarely within the confines

of the injunctive relief contemplated in *Meghrig*. In addition, other courts have determined that a clean-up order is injunctive if contamination presents an imminent and ongoing threat. *See LAJIM, LLC v. Gen. Elec. Co.*, 2016 WL 5792677, at *3 (N.D. Ill. Oct. 4, 2016) (holding that under RCRA, "once a court finds that the plaintiff has met the requirements of a citizen suit and the suit is not barred, a court has the power to stop further contamination as well as to remediate past contamination").[33] The evidence in the record shows that the contamination in the class area is sufficiently persistent and harmful such that it poses a substantial and ongoing threat to human health. As a result, contaminants from the Arkema Incident pose a risk to all putative class members, not just those whose properties are presently contaminated. Compensating individual property owners for the cost of physical remediation would not remedy the class-wide harm. Individual property owners might be made whole, but the class would not be brought back to baseline. As a result, the Court finds that injunctive relief predominates in Plaintiffs' remediation injunction. Plaintiffs' requested relief cannot be replicated with a check.

[33] *See e.g.*, *Mavigliano v. McDowell*, 1995 WL 704391, at *5–6 (N.D. Ill. Nov. 28, 1995) (holding that the plaintiff's request for an order to force the defendants to remediate the site was a prayer for injunctive relief), *Express Car Wash Corp. v. Irinaga Bros.*, 967 F. Supp. 1188, 1192 (D. Or. 1997) (noting that "a plaintiff facing an imminent threat from hazardous waste, when no remediation has yet taken place, clearly can sue under RCRA for an injunction to force appropriate parties to clean up the contamination"), *Furrer v. Brown*, 62 F.3d 1092, 1097 (8th Cir. 1995) (reasoning that RCRA "authorizes injunctive relief, whether prohibitory (to stop generating hazardous waste) or mandatory (to comply with permits or regulations or to clean up hazardous waste)"), *Potomac Riverkeeper, Inc. v. Nat'l Cap. Skeet & Trap Club, Inc.*, 388 F. Supp. 2d 582, 589 (D. Md. 2005) (concluding that a claim based on the existing "presence of lead shot that may be currently creating an imminent and substantial endangerment" that requests remediation "is prospective"), *Connecticut Coastal Fishermen's Association v. Remington Arms Co.*, 989 F.2d 1305, 1312 (2nd Cir. 1993) (determining that under RCRA, "the endangerment must be ongoing, but the conduct that created the endangerment need not be"), *Comm. to Save Mokelumne River v. East Bay Mun. Util. Dist.,* 13 F.3d 305, 309 (9th Cir. 1993) (holding that an order requiring remediation to remove and dispose of previously deposited sediment is prospective).

v. Whether the injunctive relief sought is reasonably specific

Finally, Arkema contends that Plaintiffs' remediation injunction is insufficiently specific. On appeal, the Fifth Circuit held that the Court's prior order "leaves us uncertain as to how the extent of necessary property remediation can be determined, and whether a responsive injunction can be fashioned to account for Arkema's past remediation efforts." *Prantil*, 986 F.3d at 582. The Fifth Circuit also noted that while "it is not necessarily fatal to a uniform scheme of property remediation that certain properties may contain higher concentrations of contaminants than others," Plaintiffs needed to "identify a common method of remediation and some reasonable standard by which remediation might be assessed." *Id.* Plaintiffs have solved these issues on remand.

Mr. Glass fills in the blanks identified by the Fifth Circuit. Mr. Glass suggests that the injunction should mirror a typical CERCLA remediation proceeding, running from (1) Preliminary Assessment, to (2) Remedial Investigation/Feasibility Study (Site characterization), to (3) Remedy Decision, to (4) Remedial Design/Remedial Action, to (5) Construction Completion, to (6) Post Construction Completion, and finally to (7) Site Reuse/Redevelopment. ECF No. 265-2 (Exhibit C) at 21. Mr. Glass proposes cleanup goals for remediation: 4.8 pg/g for dioxin and dioxin-like compounds in exterior soil and 20 pg/ft^2 for interior spaces. *Id.* at 21–25. He also proposes the form for remediation: excavation and retrieval with off-site disposal for soils, and a multi-step cleaning process focused on attic insulation replacement, attic cleaning, intensive cleaning of living spaces and floors, carpet cleaning, furniture cleaning and HVAC duct cleaning. *Id.*; ECF No. 264-1 at 12.

These details meet the specificity requirement of Rule 23(b)(2). " 'Rule 23(b)(2) does not require that every jot and tittle of injunctive relief be spelled out at the class certification stage,'

but some 'reasonable detail' as to the 'acts required' is necessary." *Prantil*, 986 F.3d at 581 (quoting *Yates*, 868 F.3d at 368) (cleaned up). Through Mr. Glass, Plaintiffs provide reasonable detail as to the acts required of Arkema. At this stage, Plaintiffs need not set out which sample they are going to take on which day. What's more, while Arkema might disagree with Plaintiffs' proposed remediation levels, Plaintiffs have specified reasonable standards by which remediation might be assessed. Those standards are rooted in carcinogenic risk factors. *See* ECF No. 264-1 at 10–11. Other states have used those standards as remediation goals. *See* ECF No. 231-5 at 24 (noting that the California Department of Toxic Substances Human and Ecological Risk Office uses the RSL of 4.8 pg/g for remediating certain residential soils that have been contaminated with dioxins). And these standards can evolve over time. Plaintiffs are not locked into the standards that they suggest today. In *Yates*, the Fifth Circuit affirmed this Court's certification order even though it "did not specify the precise temperature" that needed to be reached to alleviate the harm to the plaintiffs. 868 F.3d at 368. That requested injunction contained sufficient "meaningful content" and "guidance." *Id.* So too here. Plaintiffs have " 'give[n] content' to the injunctive relief they seek 'so that final injunctive relief may be crafted to describe in reasonable detail the acts required.' " *Yates*, 868 F.3d at 367 (quoting *Perry*, 675 F.3d at 848 (cleaned up)).[34]

[34] Arkema does not devote much space to arguing that Plaintiffs' proposal fails to account for Arkema's past remediation efforts. ECF No. 285 at 50–51. With good reason. Arkema has remediated just nine properties out of more than 10,000 in the class area. ECF No 264-1 at 16–17. Arkema can hardly preclude certification with such *de minimis* efforts. What's more, the letter attached to Arkema's Response indicates that its efforts were directed toward contamination from the wastewater spills. ECF No. 285-3 (Exhibit 36) at 1–2. There is no mention of contamination from smoke and ash. There is no mention of dioxins. And there is no mention of the contamination levels that Arkema targeted. As such, Plaintiffs' failure to explicitly exclude the small number of properties that Arkema "remediated" does not preclude their request for an injunction.

vi. Summary

Overall, the Court finds that, with respect to the property remediation injunction, Plaintiffs have shown: (1) class members were harmed in essentially the same way (and the class is sufficiently cohesive); (2) injunctive relief predominates over monetary damage claims; and (3) the injunctive relief sought is specific. In deciding whether to certify a class, the Court cannot shy away from delving into the merits of the ultimate case. But Rule 23 is fundamentally procedural in nature. It does not demand that the Court try the case or undertake a summary judgment style review. Arkema will have the opportunity to contest Plaintiffs' case on the merits. But the Court will not transform certification into trial. Based on the evidence currently in the record, the Court finds that certification of Plaintiffs' requested Rule 23(b)(2) injunctive-relief class for property remediation is warranted. The Court therefore **CERTIFIES** a class defined as "all residents and real property owners located within a 7-mile radius of the Crosby, Texas, Arkema Chemical Plant" under Rule 23(b)(2) to pursue the property remediation relief outlined in Plaintiffs' papers.

3. Plaintiffs' Proposed Medical Surveillance Injunction

Plaintiffs also request certification of an injunctive-relief class for medical surveillance. Plaintiffs imagine that surveillance "will consist of a flexible, court-administered program that will study and assess the likely associated risks to human health posed by the Arkema release." ECF No. 264-1 at 13. Plaintiffs say that the program "will develop a recurring health survey to look for disease development" by engaging "an experienced epidemiologist." *Id.* Plaintiffs do not provide details as to the precise contents of the survey, but suggest that it should:

> look at pulmonary events that developed or worsened at the time of or subsequent to the event; study cancers with analysis focused on those developed subsequent to the event, including cancers accepted by the National Science Foundation and Veterans' Administration as related to Agent Orange, a similar substance to dioxins

> released here; [and] study health conditions associated with dioxin and dioxin-like chemical exposures, such as AL amyloidosis, chloracne, Type 2 diabetes, hypothyroidism, ischemic heart disease, Parkinson's disease, [and] early onset peripheral neuropathy, among others[.]

Id. (citing ECF No. 264-21 at 5). Plaintiffs also argue that the study "should conduct pulmonary testing and test[] blood for elevated dioxin and dioxin-like substance levels." *Id.* at 14. Plaintiffs add that the program should "develop an educational component which will distribute information to the impacted community to aid Class members." *Id.* Plaintiffs assert that this information should "include the nature of the historic and current exposure, the risk of disease from these exposures, and signs and symptoms that may suggest the onset of one of the diseases associated with chemicals known to have been released." *Id.* Plaintiffs request that the program "advise the community on not only understanding the risk but also in providing specific information on how to decrease exposure, and activities that may increase their risk." *Id.*

i. Prior rulings

Previously, the Court certified Plaintiffs' requested class seeking an injunction for medical monitoring. ECF No. 169 at 27–28. The Court determined that Plaintiffs' allegations stemmed from a single course of conduct by Arkema. *Id.* at 27. The Court also reasoned that "[a]lthough experts could not predict the cumulative effects of exposure to the different chemicals identified by Plaintiffs, it is certain that the health risks are severe." *Id.* After all, if Plaintiffs' allegations are true, they "need to be repeatedly tested for health effects so that cancer or other diseases may be caught early and treated." *Id.* The Court recognized that "early detection and treatment will benefit the class as a whole, as a more complete understanding of the potential consequences of exposure is attained and treatment plans are put into place." *Id.* at 27–28. The Court also rejected Arkema's position that "different chemicals and levels of exposure would require separate, specifically

tailored injunctions," as "[r]egardless of individual differences in the concentrations and types of chemicals found on their properties, Plaintiffs all face exposure and the concomitant health risks, the effects of which can be mitigated by a medical surveillance program." *Id.* at 28. Finally, the Court acknowledged that "people often leave their homes, and if the putative class members do so here, they are potentially exposed to additional chemicals beyond just those found on their properties." *Id.*

As with the Court's order on property remediation, the Fifth Circuit took issue with this discussion of the injunction in "broad strokes," because it did not "satisfy the requirement that injunctive relief be reasonably specific. *Prantil*, 986 F.3d at 581. The Fifth Circuit noted that there "is some uncertainty as to what symptoms or conditions will be medically monitored for all class members," and "whether individual health considerations need to be addressed for relief to be adequate." *Id.* at 582. Still, the Fifth Circuit said that "[t]he current record does not compel the conclusion that Plaintiffs' medical . . . injuries are incapable of being addressed by classwide injunctions." *Id.* Thus, the Fifth Circuit concluded that the Court must "evaluat[e] the particulars of each injunction on remand . . . [to] arrive at a nuanced assessment of whether Plaintiffs' claims for relief can be effective addressed in a class action." *Id.*

ii. Whether class members have been harmed in essentially the same way

Arkema contends that Plaintiffs' request for medical surveillance fails because class members have not been harmed in essentially the same way.[35] Many of the arguments here mirror

[35] Arkema also submits that medical surveillance is unavailable under RCRA. But RCRA provides an expansive grant of authority: "The district court shall have jurisdiction . . . to restrain any person who has contributed to or who is contributing to the past or present handling, storage, treatment, transportation, or disposal of any solid or hazardous waste . . . *to order such person to take such other action as may be necessary*, or both[.]" 42 U.S.C. § 6972(a)(2) (emphasis added). And contrary to Arkema's assertions, other courts have found medical monitoring a theoretically

those addressed above in the section on the property remediation injunction. And as with the property remediation injunction, Plaintiffs have submitted enough evidence to show that they have been harmed in essentially the same way here.

Plaintiffs present several pieces of evidence to demonstrate that they have been harmed in essentially the same manner. Dr. Kaltofen opined that the Arkema Incident subjected class members to levels of dioxins that exceed background levels. ECF No. 231-3 at 7–8. This opinion is rooted in Plaintiffs' samples, a comparison of chemicals at the Crosby facility with the contaminants found off-site, a physical analysis of the chunks of ash and debris found on properties after the Incident, and models of contaminant distribution. *Id.* at 7–13; ECF No. 125-6 at 4–18. Plaintiffs also rely on Dr. Kaltofen's opinion that the contaminants in the class area are undergoing resuspension, mobilization, and concentration such that members are exposed to persistent dioxins notwithstanding the original distribution of emissions. ECF No. 261-1 at 33. Plaintiffs also direct the Court to the reports of Drs. Troast and Werntz, which describe the toxic nature of the contaminants from the Incident and note that some individuals have already experienced effects. ECF No. 267-2 (Exhibit C) at 6–8. Furthermore, the record contains evidence on the danger that dioxins pose to human health, as well as the potential for synergistic effects with other substances that Arkema released. ECF No. 264-10 at 17; ECF No. 264-19 at 11. Taken together, these pieces of evidence permit the Court to find that class members have been harmed in essentially the same way—namely, via past, present, and future exposure to toxic contamination from the Arkema

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appropriate equitable remedy under RCRA. *See e.g.*, *Easler v. Hoechst Celanese Corp.*, 2014 WL 3868022, at *7 (D.S.C. Aug. 5, 2014) (finding that the plaintiff's claim for medical monitoring under RCRA "is not subject to summary dismissal," but offering no opinion "as to whether it will withstand future scrutiny or prove an appropriate remedy on the facts presented in the case of RCRA liability"). In light of RCRA's expansive grant of equitable authority, the Court rejects Arkema's argument on the unavailability of a surveillance remedy at this stage.

Incident. *See Adamson*, 855 F.2d at 676 (emphasizing that although "the claims of individual class members may differ factually," certification under Rule 23(b)(2) is a proper vehicle for challenging "a common policy"). Thus, the analysis here largely mirrors that in Part IV-B-2-(ii) and (iii): Plaintiffs have demonstrated that the class is sufficiently cohesive and that they were harmed in essentially the same way.[36]

iii. Whether injunctive relief predominates over monetary demands

Next, Arkema submits that Plaintiffs' surveillance injunction is a request for monetary relief couched in injunctive language. Arkema directs the Court to cases like *Talarico Brothers Building Corp. v. Union Carbide Corp.*, where the district court held that, under RCRA, "[p]laintiffs do not have a right to recover compensatory or punitive damages or recover from future costs of long-term medical monitoring" because those forms of relief are not equitable in nature. 2021 WL 1610200, at *15 (W.D.N.Y. Apr. 26, 2021). But Plaintiffs do not request that Arkema simply write a check to fund future treatments. Instead, Plaintiffs propose a long-term epidemiological survey to inform class members about health issues in the class area, pulmonary and serum testing to help members understand their exposure risks, and educational programs to tell members about risks in the class area. This programming is a far cry from a fund that merely disburses funds for future medical testing.

Gibbs v. E.I. DuPont De Nemours & Co. illuminates the difference between Plaintiffs' requested injunction and monetary damages. 876 F. Supp. 475 (W.D.N.Y. 1995). In *Gibbs*, the

[36] The analysis presented above on cohesiveness applies here as well. By virtue of Plaintiffs' samples, evidence of class member movement, evidence of resuspension and concentration, and evidence of the problematic nature of the contamination from the Arkema Incident, the Court concludes that the medical surveillance class is also sufficiently cohesive.

defendant argued that a monitoring fund designed to help "gather and disseminate information relating to the diagnosis and treatment of diseases resulting from exposure to benzene and other toxic heavy metals" was monetary relief dressed up in equitable clothing. *Id.* at 481. The court noted, however, that a "court-administered fund which goes beyond payment of the costs of monitoring an individual plaintiff's health to establish pooled resources for the early detection and advances in treatment of the disease is injunctive in nature rather than 'predominantly money damages' and therefore is properly certified under Rule 23(b)(2)." *Id.* Here, Plaintiffs' request "goes beyond the payment of the costs of monitoring." Plaintiffs do not request reimbursement for individual procedures. Instead, their proposed injunction is a predictive program to help class members understand and react to novel exposure conditions. *See Werlein v. United States*, 746 F. Supp. 887, 895 (D. Minn. 1990), *vacated in part on other grounds*, 793 F. Supp. 898 (D. Minn. 1992) ("In a case where a number of persons are exposed to a toxin about which little is known, and it is necessary to gather and share information regarding diagnosis and treatment through screening, the Court would consider framing a medical monitoring and information sharing program as injunctive relief."). The Court declines to take Arkema up on its invitation to circumscribe the injunctive relief that plaintiffs can pursue in mass environmental tort cases at this stage; Plaintiffs' requested surveillance relief is predominantly injunctive in nature.

iv. Whether the injunctive relief sought is reasonably specific

Arkema also takes aim at the specificity (or lack thereof) of Plaintiffs' proposal for medical surveillance. In *Prantil*, the Fifth Circuit held that the Court's prior order left "some uncertainty as to what symptoms or conditions will be medically monitored for all class members, [and]

whether individual health considerations need to be addressed for relief to be adequate." On remand, however, Dr. Werntz fleshes out the details of the proposed injunction in sufficient detail.

Again, while " 'Rule 23(b)(2) does not require that every jot and tittle of injunctive relief be spelled out at the class certification stage,' . . . some 'reasonable detail' as to the 'acts required' is necessary." *Prantil*, 986 F.3d at 581 (quoting *Yates*, 868 F.3d at 368) (cleaned up). Arkema believes that Plaintiffs have not provided sufficient detail because they have neither retained an epidemiologist nor designed the survey they intend to circulate. Arkema also takes issue with the fact that the as-yet-unretained epidemiologist may be empowered to change the details of the program. Arkema therefore argues that "Plaintiffs' medical-surveillance proposal boils down to this: make Arkema fund and be beholden to an as-yet-unknown epidemiologist to conduct as-yet-not-designed medical surveillance." ECF No. 285 at 45. Furthermore, Arkema submits that Plaintiffs failed to answer the Fifth Circuit's question as to how an injunction would deal with individual health considerations.

The Court finds that Plaintiffs' request for medical surveillance contains sufficient detail. Relying on Dr. Werntz's report, Plaintiffs ask for "the type of surveillance program that will address longer term concerns about the manifestation of acute effects, since many of the dioxins and other chemicals released and which linger in the community are known respiratory, skin and mucous membrane irritants, and symptoms related to these types of conditions will likely be an issue until the properties are cleaned up." ECF No. 264-1 at 18. Plaintiffs note that "[s]ince this is a novel mixture with no specific expected outcome, the very basis of the proposed surveillance program is to track unusual health effects arising in this specific population." *Id.* Plaintiffs add that in addition to a survey designed to track unusual health effects, class members should receive pulmonary function testing to examine the incidence of pulmonary disease and blood testing for

dioxins and dioxin-like substances. *Id.* at 19. Plaintiffs also specify that the symptoms and conditions to be tracked include pulmonary impacts like shortness of breath and asthma, skin-related impacts, cancers associated with Agent Orange (including bladder cancer, chronic B-cell leukemia, Hodgkin's disease, multiple myeloma, prostate cancer, respiratory cancers, and some soft tissue sarcomas), and conditions associated with dioxin exposures (including AL amyloidosis, chloracne, Type 2 diabetes, hypothyroidism, ischemic heart disease, Parkinsonism, Parkinson's disease, early onset peripheral neuropathy, and porphyria cutanea tarda). *Id.* at 19–20.

This is enough detail for certification. Plaintiffs need not describe the exact questions that will be included in the epidemiological survey at this procedural stage. Requiring that level of specificity moves from "reasonable details" to "jots and tittles." The list of eligible conditions and concerns in Dr. Werntz's report indicates that there is an outer bound on the scope of the survey. Plaintiffs' response to Arkema's critique regarding individual health considerations is also sufficient. Plaintiffs do not need to address those considerations for surveillance (as opposed to medical monitoring) because the benefits from surveillance accrue from providing information to the population regarding changes in the community, rather than from individualized treatment. Medical surveillance consists of forward-looking searches and surveys to see if individuals "[a]re showing signs of toxicity from exposure." ECF No. 284-4 at 30:14-18. Surveillance is less extensive than medical monitoring, and is therefore more appropriate "in cases in which there is limited information on specific health [effects'] relationship to exposure[.]" *Id.* at 53:5-12. Thus, because Plaintiffs are not seeking "an intervention for individual members of the community," concerns about individualized health considerations fade into the background. ECF No. 290 at 7. Overall, then, the Court finds that Plaintiffs' requested surveillance injunction is sufficiently specific.

v. Summary

In sum, the Court finds that there is enough evidence in the record on Plaintiffs' request for medical surveillance to determine that (1) class members were harmed in essentially the same way; (2) injunctive relief predominates over monetary damage claims; and (3) the injunctive relief sought is reasonably specific. *Maldonado*, 493 F.3d at 524. The Court therefore **CERTIFIES** a class defined as "all residents and real property owners located within a 7-mile radius of the Crosby, Texas, Arkema Chemical Plant" under Rule 23(b)(2) to pursue the medical surveillance relief outlined in Plaintiffs' papers.

C. Rules Enabling Act and Due Process Arguments

Finally, Arkema raises concerns related to the Rules Enabling Act and Due Process Clause. The Rules Enabling Act forbids an interpretation of Rule 23 that "abridge[s], enlarge[s] or modif[ies] any substantive right." 28 U.S.C. § 2072(b). As a result, "a class cannot be certified on the premise that [a defendant] will not be entitled to litigate its statutory defenses to individual claims." *Dukes*, 564 U.S. at 367. Similarly, a class cannot be certified on the premise that a defendant will not be entitled to bring a "challenge to a plaintiff's ability to prove an element of liability." *In re Asacol Antitrust Litig.*, 907 F.3d 42, 53 (1st Cir. 2018). Here, Arkema contends that both of Plaintiffs' proposed injunctions "seek to require Arkema to fund an investigation into whether any individual property or person was harmed," which represents a "remedy-first, proof-later approach" that "deprive[s] Arkema of its right to challenge each plaintiff's ability to prove liability." ECF No. 285 at 49–50. The Court disagrees: Plaintiffs' proposed injunctions do not run afoul of the Rules Enabling Act or the Due Process Clause.

1. The Property Remediation Injunction

Arkema believes that Plaintiffs' remediation injunction violates the Supreme Court's admonition that "a class cannot be certified on the premise that [a defendant] will not be entitled to litigate its statutory defenses to individual claims." *Dukes*, 564 U.S. at 367. Arkema notes that "[i]f this were a single-plaintiff case, . . . the plaintiff would have to demonstrate, and Arkema would be entitled to challenge at trial prior to any judgment, (1) his exposure to the alleged contaminants of concern (here, dioxins); (2) resulting injury or substantial risk of future injury; and (3) that the exposure and resulting injury were due to the Arkema releases rather than another source." ECF No. 285 at 49. Under Plaintiffs' proposed remediation injunction, however, Arkema struggles to imagine how it could raise issues with individual exceedances. Consider a member of the class who burns trash in the backyard. Under Plaintiffs' proposed remediation injunction, that individual's property might be tested, exceed the threshold level of dioxins, and receive physical remediation, without Arkema having the chance to show that it did not cause the exceedance on that property.

In Plaintiffs' Reply, they argue that Arkema's position would render "remediation remedies in class litigation that seek to implement any investigation component . . . invalid as a matter of law." ECF No. 290 at 26. Plaintiffs contend that this cannot be the case, since other courts have certified classes seeking remediation with an investigative component under Rule 23(b)(2). *Bentley v. Honeywell Int'l Inc.*, 223 F.R.D. 471, 486 (S.D. Ohio 2004); *Mejdreck v. Lockformer Co.*, 2002 WL 1838141, at *2 (N.D. Ill. Aug. 12, 2002).[37] Plaintiffs further argue that

[37] The Court does note, however, that these cases were decided before *Dukes*. In addition, those cases featured industrial solvents, so there may have been less reason to attribute a positive test result to an alternative source.

"Arkema's arguments only have merit if, in the wake of a man-made disaster and chemical fallout from a defendant's toxic release, the law requires the impacted community to sort out all of the particular details about each parcel impacted by harmful particulate matter, in advance of filing suit, and at considerable cost." ECF No. 290 at 26.

The Court concludes that Arkema's argument on this issue is unavailing, as it rests on a misapprehension as to how liability will be determined in this case.[38] Arkema suggests that it should be able to contest the results of site characterization after an injunction has issued. But if site characterization is occurring, the Court will have already found Arkema liable. Proof of liability and any defenses thereto can, will, and must be presented by the parties before site characterization takes place. Thus, if Arkema wishes to present evidence that properties in the class area are contaminated with dioxins from alternate sources, it is free to do so when the issue of liability is being adjudicated. At its core, Arkema's position essentially amounts to an argument that class action treatment is impossible because it released contamination that already existed to some degree in the environment. That will not do.

In addition, an appropriate remediation goal will alleviate Arkema's concerns. In *Prantil*, the Fifth Circuit stated: "it is not necessarily fatal to a uniform scheme of property remediation that certain properties may contain higher concentrations of contaminants than others, provided Plaintiffs can identify a common method of remediation and some reasonable standard by which remediation might be assessed." 986 F.3d at 582. Setting the remediation goal where Arkema is

[38] The Court also notes that Arkema pressed its arguments about the Rules Enabling Act and the Due Process Clause on appeal, but the Fifth Circuit ignored those arguments in their entirety. *Compare* Brief for Appellant at 55–61, *Prantil v. Arkema Inc.*, 986 F.3d 570 (5th Cir. 2021) (No. 19-20723), *and* Reply Brief for Appellant at 26, *Prantil v. Arkema Inc.*, 986 F.3d 570 (5th Cir. 2021) (No. 19-20723), *with Prantil*, 986 F.3d 570 (5th Cir. 2021).

required to remediate only contamination that it caused will answer Arkema's "remedy-first, proof-second" protestations. Arkema will be able to present individualized defenses going to alternate sources of contamination; those defenses will inform the existence and contours of any subsequent injunctive relief. Say, for example, that Arkema gathers evidence that the hypothetical class member who burns trash in the yard lives on a property that features dioxin levels of 5.5 pg/g. Arkema can use that evidence before the injunction issues to argue that Plaintiffs' remediation goal would force it to clean up contamination that is not attributable to the Incident. Thus, Arkema will be able to present its defenses during the liability phase that will precede the issuance of any injunction. What Arkema cannot do, however, is imagine the existence of a hypothetical trash burner and say that certification is inappropriate because he *might* exist. Arkema cannot defeat certification with such conjecture.

It is true that "a court has an obligation before certifying a class to 'determin[e] that Rule 23 is satisfied, even when that requires inquiry into the merits." *Goldman Sachs Grp., Inc. v. Ark. Teacher Ret. Sys.*, 141 S. Ct. 1951, 1960–61 (2021) (quoting *Comcast*, 569 U.S. at 35). But there is a difference between considering the merits and requiring a group of would-be class action plaintiffs to prove their case at this procedural stage. Now is not the time for trial. Following certification, Plaintiffs will have the opportunity to collect additional evidence to sustain their claims. The exact goal for remediation will be determined at the merits stage of this proceeding.[39]

[39] The Court recognizes that Plaintiffs' proposed remediation goals may not end up proving appropriate. But Plaintiffs need not specify the precise goal at this stage, so long as the evidence indicates that they will ultimately be able to provide a reasonable goal. In *Yates*, the plaintiffs "identified air-conditioning as a remedy that would provide relief to each member of the class" and identified "maintaining a heat index of 88 degrees or lower" as the applicable standard. 868 F.3d at 368. This Court's certification order, however, "did not specify the precise temperature" that needed to be reached. *Id.* Nevertheless, the Fifth Circuit upheld the Court's decision to certify the class. Similarly, while *Prantil* specified that Plaintiffs needed to provide "some reasonable

It would render the class action mechanism a dead letter if Arkema could defeat certification by conjecturing that the aggregation of claims automatically defeats its right to contest individual elements of liability. The Court rejects Arkema's arguments against Plaintiffs' proposed property remediation injunction on the basis of the Rules Enabling Act and Due Process Clause.

2. The Medical Surveillance Injunction

Arkema also contends that Plaintiffs' proposed medical surveillance injunction violates its right to mount a full defense. Arkema argues that Plaintiffs' relief would preclude it from "contest[ing], among other things, whether a particular plaintiff needs the proposed surveillance in the first place; whether the surveillance would be duplicative of or inconsistent with that plaintiff's already-existing care plan; or whether any of the conditions or symptoms being surveilled were pre-existing or otherwise not attributable to the Arkema releases." ECF No. 285 at 50. Arkema adds that such defenses "are not hypothetical," as some of the named plaintiffs themselves have recovered for pulmonary injuries in other cases and have stated that they need to check with their doctors to make sure that surveillance is right for them. *Id*

Arkema's arguments here do not hold water. Whether a particular plaintiff needs the proposed surveillance can be adjudicated in the class-wide proceeding. If the facts indicate that individuals across the class would benefit from a surveillance injunction because they were exposed to heightened levels of contaminants, a suitable injunction will issue. The fact that a class member might have preexisting conditions or have been exposed to other contamination does not

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standard by which remediation might be assessed," it did not require that the standard identified at this stage be the final standard that is incorporated into the injunction. 986 F.3d at 582. Here, Plaintiffs' proposed goals are sufficiently reasonable at this stage because they are rooted in science and toxicological research. To succeed on the merits, however, Plaintiffs may very well need to present more scientific evidence and more testing.

prevent them from benefitting from surveillance. Under RCRA, at least, the standard is whether Arkema's actions "*may* present an imminent and substantial endangerment to health or the environment[.]" 42 U.S.C. § 6972(a)(1)(B) (emphasis added). What's more, if surveillance is duplicative or inconsistent with a given class member's pre-existing care plan, that is an issue for the class member to sort out, not Arkema. Finally, whether the conditions or symptoms being surveilled are attributable to the Arkema releases can be adjudicated on a class-wide basis, without any need for individualized defenses. Consequently, the Court sees no Rules Enabling Act or Due Process Clause problems with Plaintiffs' proposed medical surveillance injunction.

V. CONCLUSION

For the reasons set out above, the Court takes the following steps.

The Court **DENIES** Plaintiffs' Motion to Exclude the Opinions of Mr. Gary Papke and Dr. Thomas Hamilton **AS MOOT** (ECF No. 261).

The Court **GRANTS IN PART** and **DENIES IN PART** Plaintiffs' Motion to Exclude the Opinions of Dr. Sheng Li (ECF No. 262).

The Court **GRANTS** Arkema's Motion to Exclude the Opinions of Dr. John Kilpatrick (ECF No. 268).

The Court **DENIES** Arkema's Motion to Exclude the Opinions of Mr. Marc Glass (ECF No. 265).

The Court **DENIES** Arkema's Motion to Exclude the Opinions of Dr. Marco Kaltofen (ECF No. 266).

The Court **DENIES** Arkema's Motion to Exclude the Opinions of Drs. Richard Troast and Charles Werntz (ECF No. 267).

The Court **DENIES** Plaintiffs' Renewed Motion for Class Certification under Rule 23(b)(3) (ECF No. 264).

The Court **GRANTS** Plaintiffs' Renewed Motion for Class Certification under Rule 23(b)(2) (ECF No. 264). The class is defined as follows: "All residents and real property owners located within a 7-mile radius of the Crosby, Texas, Arkema Chemical Plant." The Court **APPOINTS** Corey Prantil, Betty Whatley, Beverly Flannel, Roland Flannel, Larry Anderson, and Tanya Anderson as class representatives.

The Court **GRANTS** Plaintiffs' request to appoint class counsel (ECF No. 264-2).[40] The Court **APPOINTS** Michael G. Stag and Ashley Liuzza and the law firm of Stag Liuzza, LLC; Van Bunch and the law firm of Bonnett Fairbourn Friedman & Balint, P.C.; Mark F. Underwood and the law firm of Underwood Law Offices; and Kevin W. Thompson and the law firm of Thompson Barney as Co-Lead Class Counsel.

IT IS SO ORDERED.

SIGNED at Houston, Texas, on this 18th day of May, 2022.

KEITH P. ELLISON
UNITED STATES DISTRICT JUDGE

[40] The Court finds that Plaintiffs' counsel has proven competent thus far. The Court therefore finds Plaintiffs' counsel adequate.